3.16 Test Excavation 206 (T-206)

Ahupua‘a:	Waikīkī
LCA:	100 FL
TMK #:	2-3-039: 013
Elevation Above Sea Level:	1.38 m
UTM:	619833.87 mE, 2355035.49 mN
Max Length/Width/Depth:	3.1 m / 0.9 m / 0.85 mbs
Orientation:	124 / 304° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 206 (T-206) was located in a landscaped planter box on the north (*mauka)* side of Kona Street, 10 m northwest of the intersection of Kona Street and Kona Iki Street. T-206 was located on private property. The closest utilities were an electric line 0.8 m south of T-206 and a water line 8.5 m south. The test excavation was 0.3 m above the Kona Street north (*mauka)* sidewalk and 0.44 m above the Kona Street roadcut.

Summary of Background Research and Land Use: Baldwin’s 1883 Honolulu Water Works map located T-206 approximately 370 m north of the coastline. S. E. Bishop’s map of the Kewalo area of Honolulu (1884) indicated that T-206 was located within Kekaula’s LCA 100 FL:2, which was comprised fort lands, two ponds, five *ki‘o pua*, one taro *lo‘i*, one house lot, and one kula pasture. Lot Kamehameha’s Grant 2790, comprised of marshlands, was immediately to the south. Sheridan Street was located approximately 170 m west of T-206, according to S.E. Bishop’s 1884 map of Honolulu. W. A. Wall’s 1887 map of Honolulu indicated agricultural development to the north and east of T-206, while the immediate surrounding area remained marshlands. According to the 1919 U.S. Army War Department map, the vicinity of T-206 had undergone moderate urban development since 1887. The 1933 U.S. Army War Department map of Honolulu indicated that the entire area that surrounded T-206 had been marked with a grid pattern for planned urban development and the shoreline had been extended to approximately 600 m south of T-206. The 1939–41 U.S. Army Air Corps aerials and the 1943 U.S. Army War Department map indicated continued urban development in the area including Ala Moana Beach Park, 400 m south of T-206. The 1952 University of Hawai‘i SOEST aerials from Kaka‘ako to Waikīkī indicated, along with heavy urban development, what appeared to be the initial construction phase of the Ala Moana Shopping Center to the south of T-206. According to the 1953 U.S. Army Mapping Service map, the entire area had undergone heavy urban development by that time and T-206 was located within present-day Kona Street.

Previous archaeology of the area surrounding T-206 included several studies. In 1989, approximately 90 m northwest of T-206, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi Street (Smith 1989). A 2006 archaeological monitoring project of road resurfacing on Pi‘ikoi Street (140 m west of T-206) yielded no cultural materials, but continued monitoring in

the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Esh and Hammatt 2006). In 2012, an archaeological inventory survey was conducted 135 m to the southwest of T-206 along Kona Street and documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Runyon et al. 2012). This same historic property was also located south of T-206. At the time of this report, an archaeological inventory study documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-206 was excavated to a depth of 0.85 mbs. A concrete footing or utility jacket and a utility pipe located at the base of excavation prevented further excavation.

Stratigraphic Summary: The stratigraphy of T-206 consisted of fill to the base of excavation. Observed strata included silty loam fill (I). The stratigraphy conformed to the USDA soil survey designation of Fill land.

Artifact Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample results: No sample analysis was conducted.

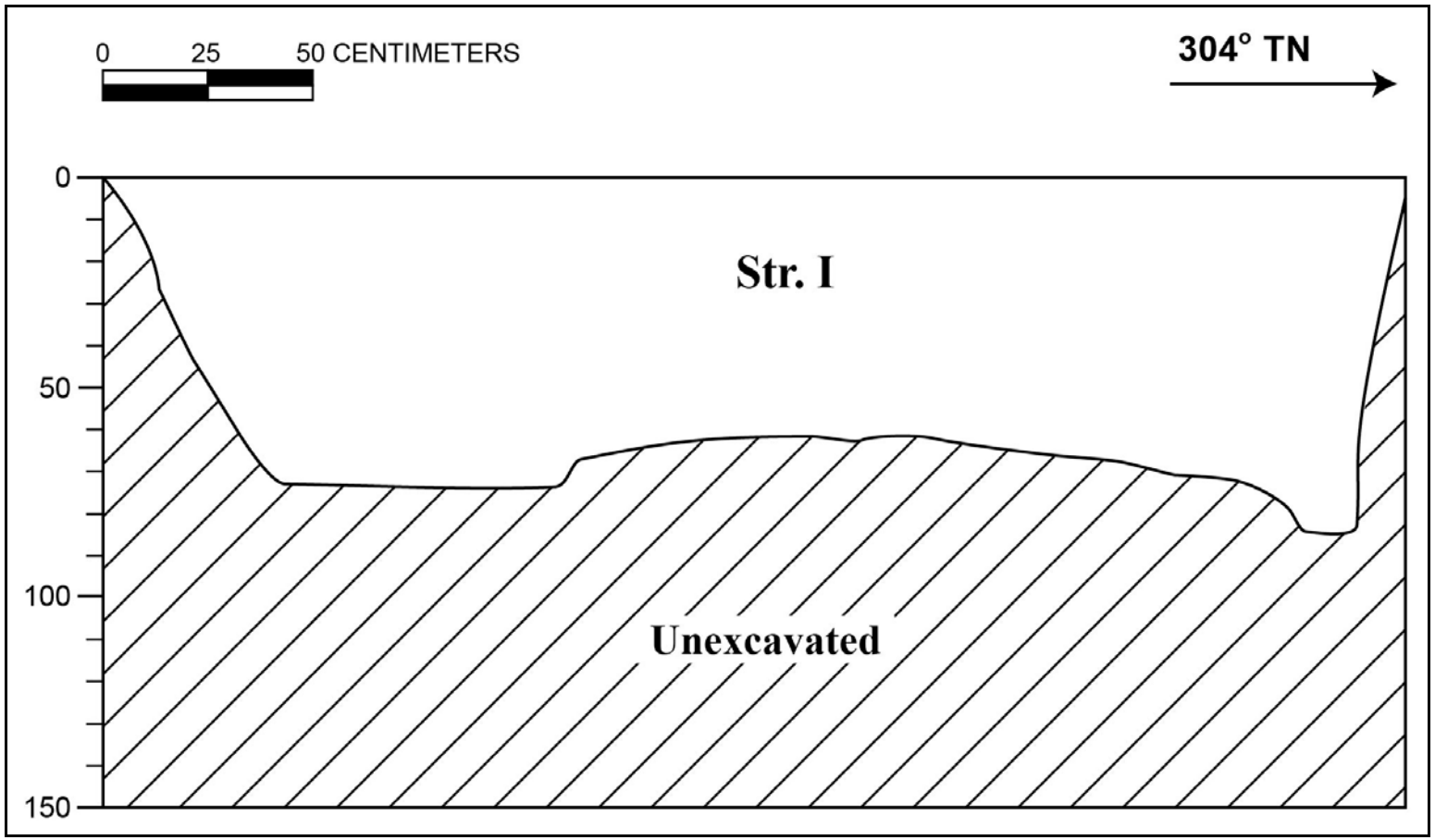
GPR Discussion: A review of amplitude slice maps indicated linear features. Reflectivity is relatively uniform throughout the grid and decreases with depth except for the feature in the western corner. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.50 mbs.

GPR depth profiles for T0206 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The GPR profile also indicated a change in reflectivity occurring around 0.35 mbs. No utilities were observed in the GPR profile. The maximum depth of clean signal return was approximately 1.0 mbs.

Summary: T-206 was excavated to a depth of 0.85 mbs. A concrete footing or utility jacket and a utility pipe located at the base of excavation prevented further excavation. The stratigraphy of T-206 consisted of fill to the base of excavation. Observed strata included silty loam fill (I). The stratigraphy conformed to the USDA soil survey designation of Fill land. No cultural materials were identified within T-206.

T-206 general location, view to northeast

T-206 north profile wall, view to northeast



T-206 north wall profile

T-206 Stratigraphic Description

Stratum	Depth (cmbs)	Description
I	0–85	Fill; 10 YR 5/3 (brown); silty loam; structureless, single-grain; dry, loose consistency; non-plastic; terrigenous origin; lower boundary not visible; many, coarse to very coarse roots

3.17 Test Excavation 207 (T-207)

***Ahupua‘a*:**	Waikīkī
LCA:	N/A
TMK #:	2-3-038: 006
Elevation Above Sea Level:	1.45 m
UTM:	619823.8273mE, 2355014.19mN
Max Length/Width/Depth:	3.7 m / 0.91 m / 1.7 mbs
Orientation:	112 / 292° TN
Targeted Project Component:	Station Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 207 (T-207) was located within the sidewalk adjacent to the eastbound lane of Kona Street, next to the Ala Moana parking structure. T-207 was located on property owned by General Growth Properties Ala Moana LLC. T-207 was located 10.0 m southwest of a water utility line and 9.5 m north of an electrical utility line. The sidewalk was 0.14 m above the road surface.

Summary of Background Research and Land Use: Baldwin’s 1883 Honolulu Water Works map located T-207 approximately 370 m north of the coastline. S. E. Bishop’s map of the Kewalo area of Honolulu (1884) indicated that T-207 was located within Lot Kamehameha’s Grant 2790, which was comprised of marshlands, and south of LCA 100 FL:2, comprised of fort lands, two ponds, five *ki‘o pua*, one taro *lo‘i*, one house lot, and one kula pasture. Sheridan Street was located approximately 170 m west of T-207, according to S.E. Bishop’s 1884 map of Honolulu. W. A. Wall’s 1887 map of Honolulu indicated agricultural development to the north and east of T-207, while the immediate surrounding area remained marshlands. According to the 1919 U.S. Army War Department map, the vicinity of T-207 had undergone moderate urban development since 1887. The 1933 U.S. Army War Department map of Honolulu indicated that the entire area that surrounded T-207 had been marked with a grid pattern for planned urban development and the shoreline had been extended to approximately 600 m south of T-207. The 1939–41 U.S. Army Air Corps aerials and the 1943 U.S. Army War Department map indicated continued urban development in the area including Ala Moana Beach Park, 400 m south of T-207. The 1952 University of Hawai‘i SOEST aerials from Kaka‘ako to Waikīkī indicated, along with heavy urban development, what appeared to be the initial construction phase of the Ala Moana Shopping Center to the south of T-207. According to the 1953 U.S. Army Mapping Service map, the entire area had undergone heavy urban development by that time and T-207 was located adjacent to present-day Kona Street.

Previous archaeology of the area surrounding T-207 included several studies. In 1989, approximately 90 m northwest of T-207, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi Street (Smith 1989). A 2007 archaeological monitoring project of road resurfacing on Pi‘ikoi Street (180 m west of T-207) yielded no cultural materials, but continued monitoring in

the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Esh and Hammatt 2006). In 2012, an archaeological inventory survey was conducted 200 m to the west of T-207 along Kona Street and documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Runyon et al. 2012). This same historic property was also located south of T-207. At the time of this report, an archaeological inventory study documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-207 was excavated to the water table at a depth of 1.7 mbs. No utilities were present within T-207 to limit excavation.

Stratigraphic Summary: The stratigraphy of T-207 was comprised of fill strata overlying natural sediment to the coral shelf. The observed strata included asphalt (Ia), gravelly crushed coral fill (Ib), gravelly sandy loam (Ic), cobbly crushed coral fill (Id) overlying natural sandy clay (IIa) and clay (IIb) to the coral shelf. The stratigraphy of T-207 generally conformed to the USDA soil designation of Fill land.

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No faunal remains were encountered.

Sample Results: A total of two bulk sediment samples and one column sample were collected from within T-207. One bulk sediment sample was collected from Stratum IIa between 0.85 and 1.07 mbs (1 L). One bulk sample was collected from Stratum IIb between 1.35 and 1.45 mbs (1 L). Both sediment samples were wet-screened. The bulk sediment sample from Stratum IIa contained charcoal (0.1 g), terrestrial and/or marine snail shells (3.2g), and naturally-occurring, water-rounded marine shell (4.2 g). No significant material was identified within the sample collected from Stratum IIb. The presence of terrestrial land snail within Stratum IIa may be indicative of deposition within a wetland environment.

A sediment column sample from Stratum IIa was collected in 0.05 m increments between 0.87 and 1.31 mbs. The sediment column included 11 subsamples (1–11). Subsample 2 (0.91–0.95 mbs), Subsample 6 (1.07–1.11 mbs), and Subsample 11 (1.27–1.31 mbs) were submitted for pollen analysis. The results of pollen analysis documented the presence of increasing quantities of Poaceae and Cheno-am pollen and declining quantities of Cyperaceae pollen throughout the column sample, described from the top (0.91 mbs) to the base (1.31 mbs). Pollen analysis of the column sample collected from Stratum IIa indicated that although the natural deposit had dried out over time, the deposit contained sufficient moisture to support a sedge marsh.

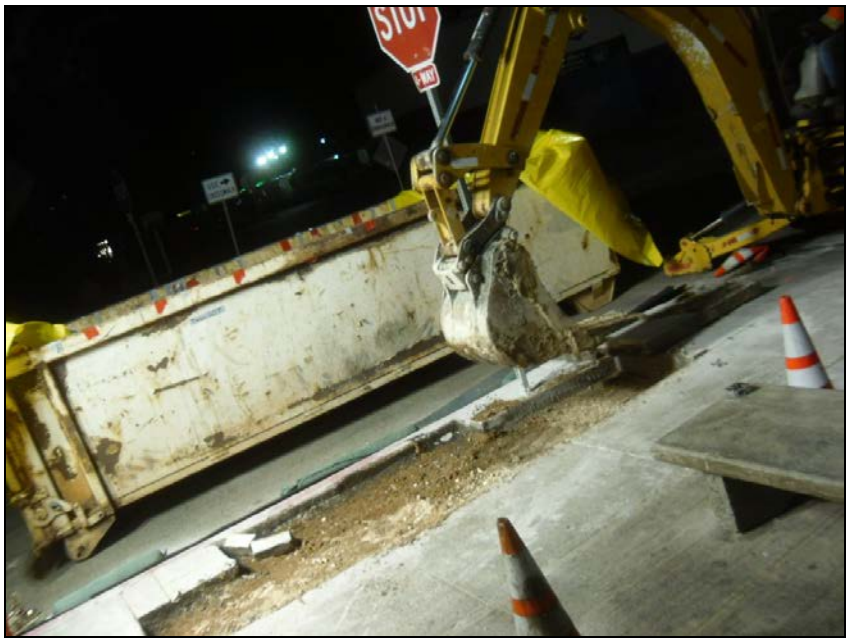
The terrestrial snail shells that were collected from the bulk sample from Stratum IIa were submitted for further identification. The analysis documented the presence of estuarine, strandline, and shoreline-dwelling species, *A. parvula* and *B. gracilis*, which were considered to be consistent with a coastal location. A fresh- or brackish-water environment was present with the presence of *M. tuberculata* indicating permanent water.

GPR Discussion: A review of amplitude slice maps indicated no linear features that might indicated the presence of utilities. Reflectivity is relatively uniform throughout the grid and

decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.25 mbs.

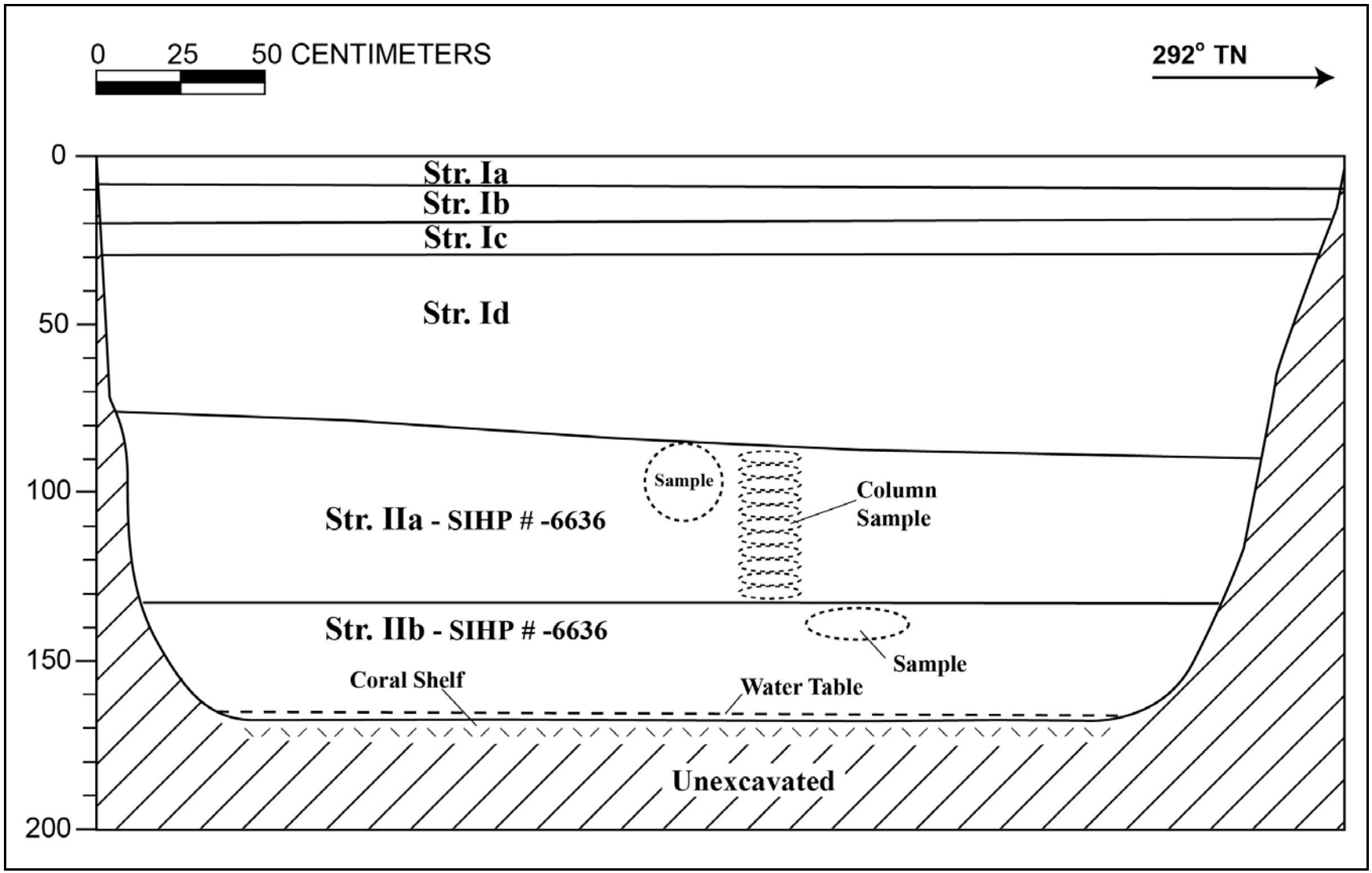
GPR depth profiles for T-207 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.3 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 1.0 mbs.

Summary: T-207 was excavated to a maximum depth of 1.7 mbs. The stratigraphy of T-207 was comprised of fill strata (Ia–Ic) overyling natural sediment (IIa and IIb). The stratigraphy of T-207 generally conformed to the USDA soil designation of Fill land. A total of two bulk sediment samples and one column sample were collected from within T-207. No significant material was identified within the sample collected from Stratum IIb. The presence of terrestrial land snail within Stratum IIa may be indicative of deposition within a wetland environment. The terrestrial snail shells that were collected from the bulk sample from Stratum IIa were submitted for further identification. The analysis documented the presence of estuarine, strandline, and shoreline-dwelling species, *A. parvula* and *B. gracilis*, which were considered to be consistent with a coastal location. A fresh- or brackish-water environment was present with the presence of *M. tuberculata* indicating permanent water. The natural sediment (IIa and IIb) within T-207 has been designated as a component of SIHP# 50-80-14-6636, Kewalo wetland sediment (see Volume I).



T-207 general location, view to northeast

T-207 south profile wall, view to southeast



T-207 south wall profile

T-207 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–10	Concrete sidewalk *makai* side of Kona Street
Ib	9–20	Fill; 10 YR 8/3 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; imported fill, 70% crushed coral gravel
Ic	18–30	Fill; 10 YR 4/3 (brown); gravelly sandy loam; moist, very friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; imported fill, 70% gravel mixed marine and terrigenous
Id	29–91	Fill; 10 YR 6/3 (pale brown); extremely cobbly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; imported fill, 80% crushed coral cobbles, topography smooth but not level
IIa	78–135	Natural, buried A-horizon; 7.5 YR 4/3 (brown) to 10 YR 4/2 (dark yellowish brown); sandy clay; structureless, massive; wet, sticky consistency; plastic; terrigenous origin; abrupt, smooth lower boundary; few, fine to medium roots; organics, fresh water snail shell associated with marsh/wetlands; component of SIHP # -6636, Kewalo wetland sediments
IIb	135–170	Natural, 10 YR 4/1 (dark gray) to 10 YR 6/1 (gray); clay; structureless, massive; wet, sticky consistency; plastic; terrigenous origin; lower boundary not visible; few, fine to medium roots; organics, fresh water snail shell associated with marsh/wetlands; component of SIHP # -6636, Kewalo wetland sediments

3.18 Test Excavation 208 (T-208)

***Ahupua‘a*:**	Waikīkī
LCA:	N/A
TMK #:	2-3-038: 006
Elevation Above Sea Level:	1.38 m
UTM:	619845.74 mE, 2355005.18 mN
Max Length/Width/Depth:	3.54 m / 0.91 / 1.72 mbs
Orientation:	120 / 300° TN
Targeted Project Component:	Station Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 208 (T-208) was located on the east *(makai)* sidewalk on Kona Street. T-208 was located on property owned by General Growth Properties, Ala Moana LLC, 1.5 m north of the Ala Moana parking structure, 10 m southeast of an electrical utility line and 9.5 m south of a water line. The excavation surface was 0.14 m above the Kona Street road cut.

Summary of Background Research and Land Use: Baldwin’s 1883 Honolulu Water Works map located T-208 approximately 370 m north of the coastline. S. E. Bishop’s map of the Kewalo area of Honolulu (1884) indicated that T-208 was located within Lot Kamehameha’s Grant 2790, which was comprised of marshlands, and south of LCA 100 FL:2, comprised of fort lands, two ponds, five *ki‘o pua*, one taro *lo‘i*, one house lot, and one kula pasture. Sheridan Street was located approximately 170 m west of T-208, according to S.E. Bishop’s 1884 map of Honolulu. W. A. Wall’s 1887 map of Honolulu indicated agricultural development to the north and east of T-208, while the immediate surrounding area remained marshlands. According to the 1919 U.S. Army War Department map, the vicinity of T-208 had undergone moderate urban development since 1887. The 1933 U.S. Army War Department map of Honolulu indicated that the entire area that surrounded T-208 had been marked with a grid pattern for planned urban development and the shoreline had been extended to approximately 600 m south of T-208. The 1939–41 U.S. Army Air Corps aerials and the 1943 U.S. Army War Department map indicated continued urban development in the area including Ala Moana Beach Park, 400 m south of T-208. The 1952 University of Hawai‘i SOEST aerials from Kaka‘ako to Waikīkī indicated, along with heavy urban development, what appeared to be the initial construction phase of the Ala Moana Shopping Center to the south of T-208. According to the 1953 U.S. Army Mapping Service map, the entire area had undergone heavy urban development by that time and T-208 was located just south of present-day Kona Street.

Previous archaeology of the area surrounding T-208 included several studies. In 1989, approximately 100 m northwest of T-208, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi Street (Smith 1989). A 2007 archaeological monitoring project of road resurfacing on Pi‘ikoi Street (180 m west of T-208) yielded no cultural materials, but continued monitoring in the area was recommended due to the high potential for encountering archaeological material

and human burials in the general vicinity (Esh and Hammatt 2006). In 2012, an archaeological inventory survey was conducted 200 m to the west of T-208 along Kona Street and documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Runyon et al. 2012). This same historic property was also located south of T-208. At the time of this report, an archaeological inventory study documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Morriss et al. 2013; *Draft*).

Documentation Limitations: The majority of T-208 was excavated to a depth of 1.60 mbs while a small portion was excavated to a depth of 1.72 mbs. The water table was present at a depth of 1.50 mbs.

Stratigraphic Summary: The stratigraphy of T-208 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata included asphalt (Ia), gravelly sandy loam fill (Ib), gravelly crushed coralline sand fill (Ic), gravelly sandy loam fill (Id), and cobbly crushed coralline sand fill (Ie) overlying natural clay loam (IIa) and clay (IIb) to the base of excavation. The stratigraphy generally conformed to the USDA soil survey designation of Fill land. Strata IIa and IIb were considered to be components of SIHP #50-80-14-6636.

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

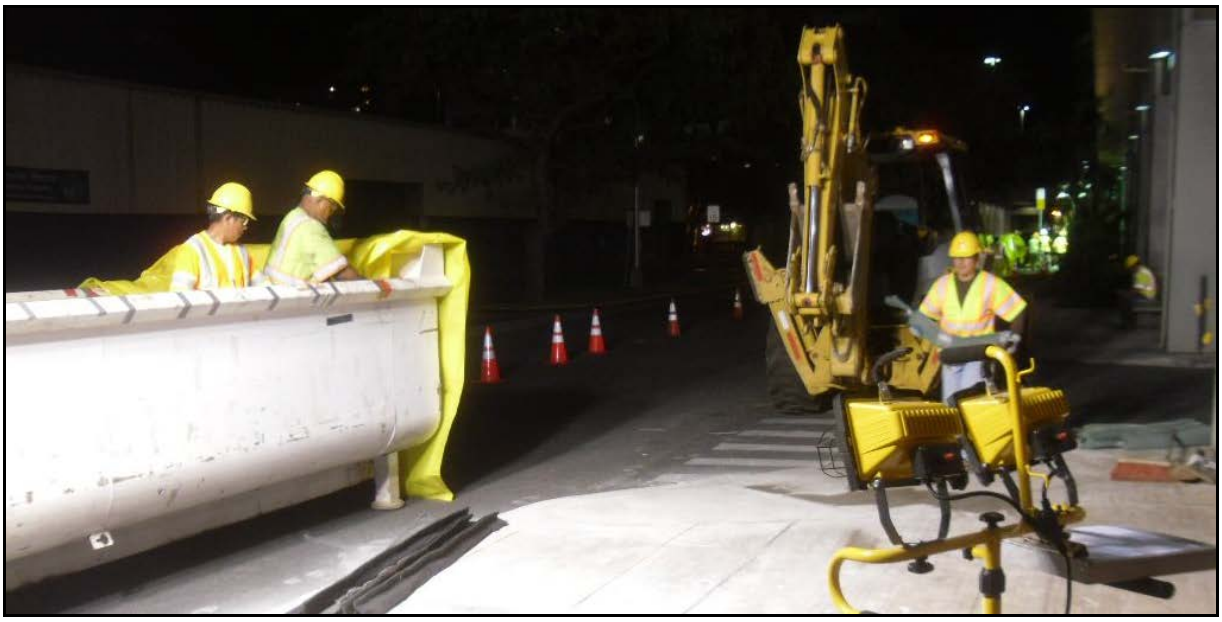
Sample Results: A total of two bulk samples were collected from Stratum IIa between 1.40–1.48 mbs (2 L) and Stratum IIb between 1.52 to 1.58 mbs (3 L). The samples were wet-screened. The bulk sample collected from Stratum II contained charcoal (0.2 g), naturally-deposited snails (5.1 g), wood pieces (1.5 g), and a seed rind (0.1 g). The bulk sample collected from Stratum IIb contained naturally-deposited shell of limpets, gastropods, and bivalve fragments (2.8 g), crustacean (0.2 g), Echinodermata *mathae sp*. (<0.1 g), and wood or root fragments (0.1 g). The results of sample analysis supported the identification of the natural sediment (IIa and IIb) as wetland deposits.

GPR Discussion: A review of amplitude slice maps indicated no linear features that may have indicated the presence of utilities. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.75 mbs.

GPR depth profiled for T-208 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.55 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.9 mbs.

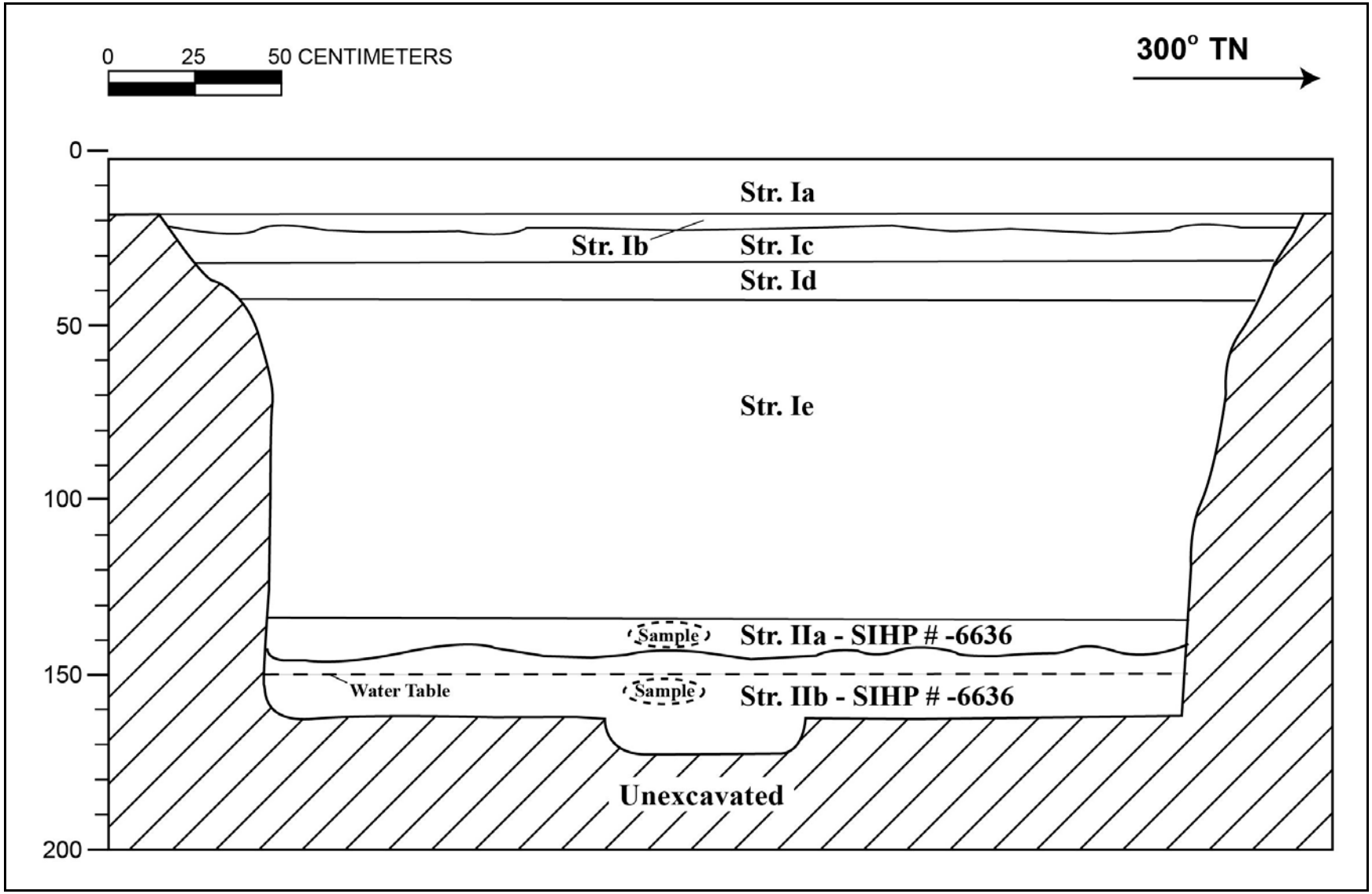
Summary: The majority of T-208 was excavated to a depth of 1.60 mbs while a small portion was excavated to a depth of 1.72 mbs. The stratigraphy of T-208 consisted of fill strata (Ia–Ie) overlying natural sediment (IIa-IIb) to the base of excavation. The stratigraphy generally conformed to the USDA soil survey designation of Fill land. The results of sample analysis supported the identification of the natural sediments (IIa and IIb) as wetland deposits. Stratum

IIa and IIb were considered to be components of SIHP #50-80-14-6636, Kewalo wetland sediment (see Volume I).



T-208 general location, view to east

T-208 southeast wall profile, view to east



T-208 southeast wall profile

T-208 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–16	Asphalt
Ib	16–21	Fill; 10 YR 3/3 (dark brown); gravelly sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; abrupt, wavy lower boundary; imported fill, 60% gravel, some marine and some terrigenous
Ic	21–30	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt lower boundary; imported crushed coral fill
Id	30–40	Fill; 10 YR 3/3 (dark brown); very gravelly sandy loam; structureless, single-grain; moist, loose, very friable consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; imported fill
Ie	40–133	Fill; 10 YR 5/2 (light brownish gray); extremely cobbly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; imported fill, 80% coral cobble material
IIa	133–150	Natural, buried A-horizon; 10 YR 3/4 (dark yellowish brown); clay loam; structureless, massive; wet, slightly sticky consistency; slightly plastic, terrigenous origin; abrupt, wavy lower boundary; contained organic matter (peat) ; component of SIHP # -6636, Kewalo wetland sediments
IIb	146–172	Natural; 10 YR 5/1 (gray); clay; structureless, massive; wet, sticky consistency; plastic; terrigenous origin; lower boundary not visible; natural sediment related to wetland/marsh, freshwater snail shell present; component of SIHP # -6636, Kewalo wetland sediments

3.19 Test Excavation 209 (T-209)

***Ahupua‘a*:**	Waikīkī
LCA:	100 FL
TMK #:	2-3-039: 011
Elevation Above Sea Level:	1.43 m
UTM:	619874.5395 mE, 2355021.9215 mN
Max Length/Width/Depth:	3.1 m / 0.92 m / 2.6 mbs
Orientation:	106 / 286° TN
Targeted Project Component:	Station Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation T-209 (T-209) was located in the Reynolds Recycling Warehouse between Kona Street and Kapi‘olani Boulevard. T-209 was located on private property owned by Sam House Development LLC. The excavation surface was level with the surrounding surface. There were no nearby utilities in the area.

Summary of Background: Baldwin’s 1883 Honolulu Water Works map located T-209 approximately 370 m north of the coastline. S. E. Bishop’s map of the Kewalo area of Honolulu (1884) indicated that T-209 was located within Kekaula’s LCA 100 FL:2, which was comprised fort lands, two ponds, five *ki‘o pua*, one taro *lo‘i*, one house lot, and one kula pasture. Lot Kamehameha’s Grant 2790, comprised of marshlands, was immediately to the south. Sheridan Street was located approximately 170 m west of T-209, according to S.E. Bishop’s 1884 map of Honolulu. W. A. Wall’s 1887 map of Honolulu indicated agricultural development to the north and east of T-209, while the immediate surrounding area remained marshlands. According to the 1919 U.S. Army War Department map, the vicinity of T-209 had undergone moderate urban development since 1887. The 1933 U.S. Army War Department map of Honolulu indicated that the entire area that surrounded T-209 had been marked with a grid pattern for planned urban development and the shoreline had been extended to approximately 600 m south of T-209. The 1939–41 U.S. Army Air Corps aerials and the 1943 U.S. Army War Department map indicated continued urban development in the area including Ala Moana Beach Park, 400 m south of T-209. The 1952 University of Hawai‘i SOEST aerials from Kaka‘ako to Waikīkī indicated, along with heavy urban development, what appeared to be the initial construction phase of the Ala Moana Shopping Center to the south of T-209. According to the 1953 U.S. Army Mapping Service map, the entire area had undergone heavy urban development by that time and T-209 was located just north of present-day Kona Street.

Previous archaeology of the area surrounding T-209 included several studies. T-209 is within an archaeological inventory survey area that was conducted in 2011 between Kona Street and Kapi‘olani Boulevard; a trash layer (SIHP #50-80-14-7193) composed of historic artifacts dating to ca. 1930-1950 was documented (Burke and Hammatt 2012). In 1989, approximately 100 m northwest of T-209, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi Street (Smith

1989). A 2007 archaeological monitoring project of road resurfacing on Pi‘ikoi Street (180 m west of T-209) yielded no cultural materials, but continued monitoring in the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Esh and Hammatt 2006). In 2012, an archaeological inventory survey was conducted 200 m to the southwest of T-209 along Kona Street and documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Runyon et al. 2012). This same historic property was also located south of T-209. At the time of this report, an archaeological inventory study documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-209 was excavated to the coral shelf to a depth of 2.60 mbs, beneath the water table at 2.26 mbs.

Stratigraphic Summary: The stratigraphy of T-209 consisted of fill strata overlying natural sediments to the coral shelf. Observed strata included concrete (Ia), gravelly silt (Ib), asphalt (Ic), crushed coral grading fill (Id), and silt loam (Ie) overlying natural silt loam (IIa) and sand with clay (IIb) to the coral shelf. The stratigraphy of T-209 generally conformed to the USDA soil survey designation of Fill land.

Artifacts Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

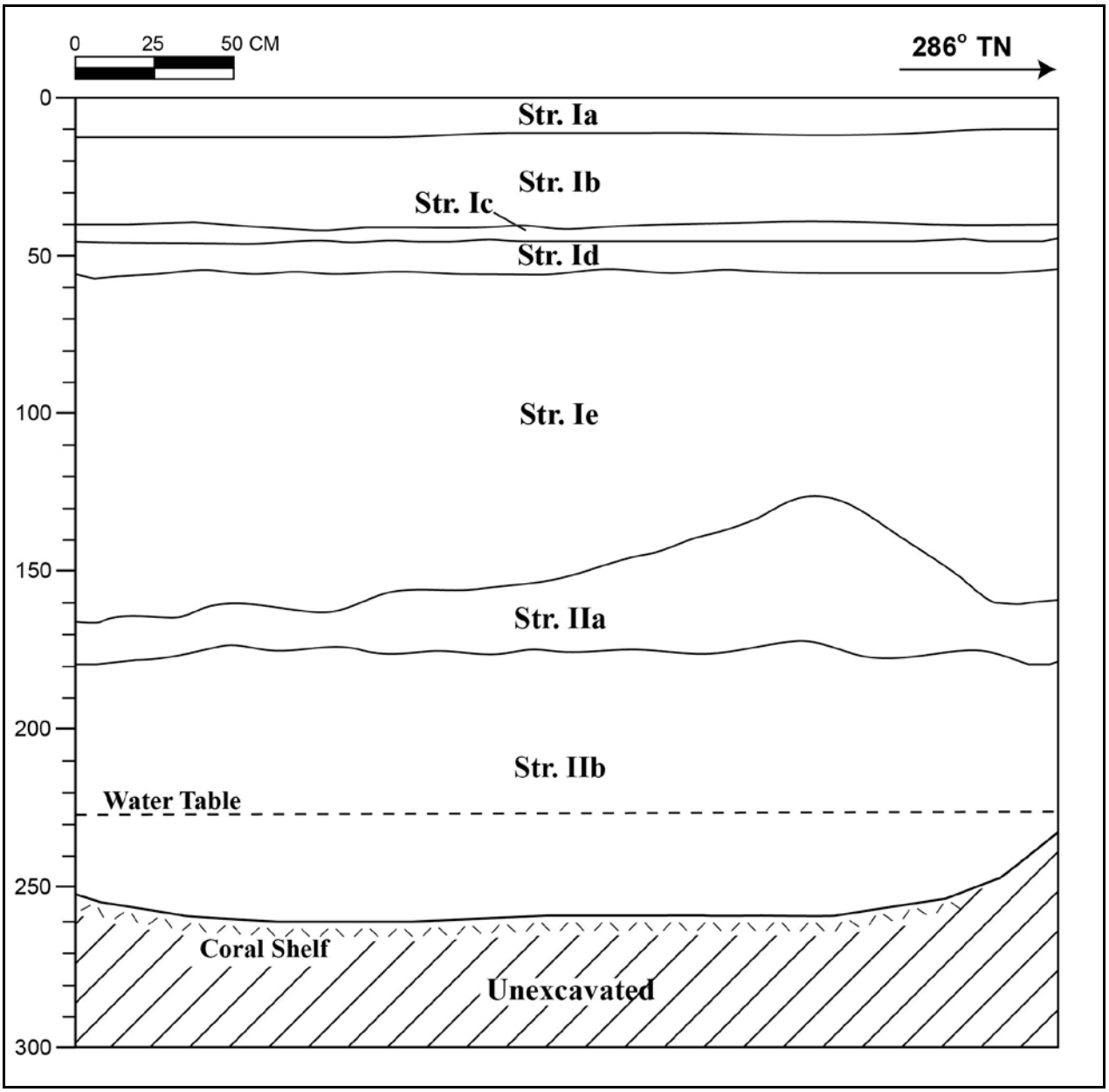
GPR Discussion: A review of amplitude slice maps indicated no linear features that might have indicated the presence of utilities. Reflectivity was relatively uniform throughout the grid and decreased with depth. A transition from higher reflectivity to lower reflectivity was observed at approximately 0.75 mbs.

GPR depth profiled for T-209 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponded to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.45 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.85 mbs.

Summary: T-209 was excavated to the coral shelf to a depth of 2.60 mbs, and beneath the water table at 2.26 mbs. The stratigraphy of T-209 consisted of fill strata (Ia–Ie) overlying natural sediments (IIa–IIb) to the coral shelf. The stratigraphy of T-209 generally conformed to the USDA soil survey designation of Fill land (FL). Overall the stratigraphy of T-209 correlated with the depositional events associated with marshlands reclaimed for urban development. No cultural materials were identified within T-209.

T-209 general location, view to east. Excavation located in Reynolds Recycling Warehouse

T-209 south profile wall, view to southeast



T- 209 south wall profile

T-209 Stratigraphic Summary

Stratum	Depth (cmbs)	Description
Ia	0–12	Concrete
Ib	12–40	Fill; 10 YR 5/3 (brown); gravelly silt; weak, very fine structure; dry, weakly coherent consistency; non-plastic; terrestrial origin; very abrupt, smooth lower boundary; gravel and small cobble inclusions
Ic	40–45	Asphalt
Id	45–55	Fill; 5 Y 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, friable consistency; non-plastic; abrupt, smooth lower boundary; crushed coral base course
Ie	55–164	Fill; 5 YR 3/4 (dark reddish brown); silt loam; weak, medium, crumb structure; moist, friable consistency; slightly plastic; terrestrial origin; clay content increases with depth; gravel inclusions
IIa	125–180	Natural; 10 YR 2/2 (very dark brown), silt loam; weak, medium, crumb structure; moist, friable consistency; slightly plastic; terrestrial origin; diffuse, wavy lower boundary; gravel inclusions; component of SIHP # -6636, Kewalo wetland sediments
IIb	176–260	Natural; GLEY 2 6/10G (greenish gray); sand with clay; weak, medium, granular structure; wet, sticky consistency; slightly plastic; mixed origin; gley; becomes more sandy with depth; overlies soft coral shelf; component of SIHP # -6636, Kewalo wetland sediments

3.20 Test Excavation 210 (T-210)

***Ahupua‘a*:**	Waikīkī
LCA:	100 FL
TMK #:	2-3-039: 011[Plat]
Elevation Above Sea Level:	1.53 m
UTM:	619887.53 mE, 2355019.46 mN
Max Length/Width/Depth:	0.60 m / 0.80 m / 1.96 mbs
Orientation:	108 / 288° TN
Targeted Project Component:	Guideway Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 210 (T-210) was located within the Reynolds Recycling Warehouse at 1391 Kapi‘olani Boulevard, near the center of the structure, on private property owned by Sam House Development LLC. T-210 was located 5 m north of an electric line and 5 m northeast of a storm drain manhole. The excavation surface was level with the surrounding land surface.

Summary of Background Research and Land Use: Baldwin’s 1883 Honolulu Water Works map located T-210 approximately 370 m north of the coastline. S. E. Bishop’s map of the Kewalo area of Honolulu (1884) indicated that T-210 was located within Kekaula’s LCA 100 FL:2, which was comprised fort lands, two ponds, five *ki‘o pua*, one taro *lo‘i*, one house lot, and one kula pasture. Lot Kamehameha’s Grant 2790, comprised of marshlands, was immediately to the south. Sheridan Street was located approximately 180 m west of T-210, according to S.E. Bishop’s 1884 map of Honolulu. W. A. Wall’s 1887 map of Honolulu indicated agricultural development to the north and east of T-210, while the immediate surrounding area remained marshlands. According to the 1919 U.S. Army War Department map, the vicinity of T-210 had undergone moderate urban development since 1887. The 1933 U.S. Army War Department map of Honolulu indicated that the entire area that surrounded T-210 had been marked with a grid pattern for planned urban development and the shoreline had been extended to approximately 600 m south of T-210. The 1939–41 U.S. Army Air Corps aerials and the 1943 U.S. Army War Department map indicated continued urban development in the area including Ala Moana Beach Park, 400 m south of T-210. The 1952 University of Hawai‘i SOEST aerials from Kaka‘ako to Waikīkī indicated, along with heavy urban development, what appeared to be the initial construction phase of the Ala Moana Shopping Center to the south of T-210. According to the 1953 U.S. Army Mapping Service map, the entire area had undergone heavy urban development by that time and T-210 was located just north of present-day Kona Street.

Previous archaeology of the area surrounding T-210 included several studies. T-210 is within an archaeological inventory survey area that was conducted in 2011 between Kona Street and Kapi‘olani Boulevard; a trash layer (SIHP #50-80-14-7193) composed of historic artifacts dating to ca. 1930-1950 was documented (Burke and Hammatt 2012). In 1989, approximately 100 m northwest of T-210, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi Street (Smith

1989). A 2007 archaeological monitoring project of road resurfacing on Pi‘ikoi Street (190 m west of T-210) yielded no cultural materials, but continued monitoring in the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Esh and Hammatt 2006). In 2012, an archaeological inventory survey was conducted 210 m to the southwest of T-210 along Kona Street and documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Runyon et al. 2012). This same historic property was also located south of T-210. At the time of this report, an archaeological inventory study documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-210 was excavated to the coral shelf at a depth of 1.96 mbs, and beneath the water table at 1.80 mbs. There were no specific factors that limited documentation of T-210.

Stratigraphic Summary: The stratigraphy of T-210 consisted of fill strata overlying natural sediments to the coral shelf. Observed strata included concrete (Ia), asphalt (Ib), crushed coral fill (Ic), imported silt loam (Id), clay loam (Ie), peaty layer (IIa), clay (IIb), and sand with clay (IIc). The stratigraphy generally conformed to the USDA soil designation of Fill land.

Artifact Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

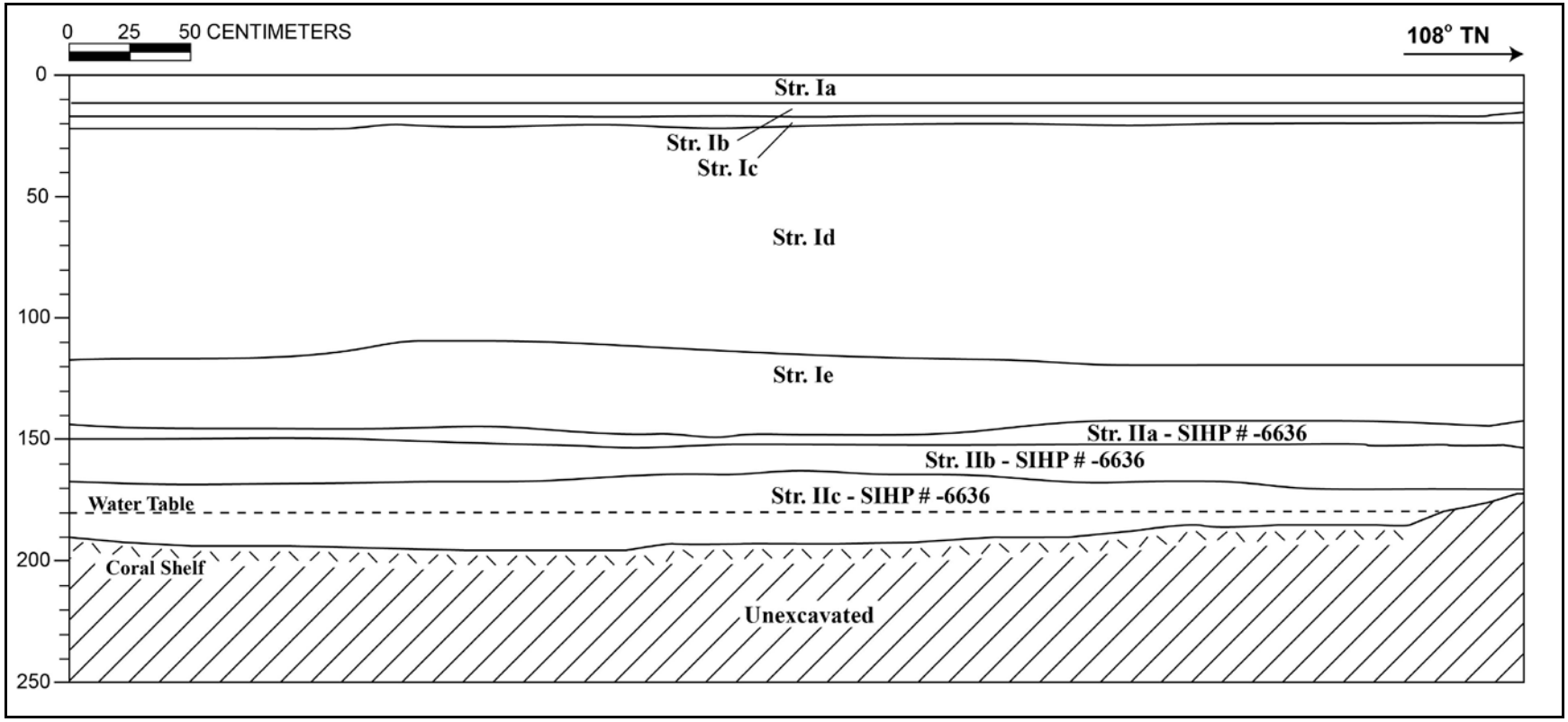
GPR Discussion: A review of amplitude slice maps indicated no linear features that might indicated the presence of utilities. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.5 mbs.

GPR depth profiles for T-210 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.4 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.90 mbs.

Summary: T-210 was excavated to the coral shelf at a depth of 1.96 mbs, and beneath the water table at 1.80 mbs. The stratigraphy of T-210 consisted of fill strata (Ia–Ie) overlying natural sediments (IIa–IIc) to the coral shelf. The stratigraphy generally conformed to the USDA soil survey designation of Fill land. The natural sediments (IIa–IIc) were considered to be components of SIHP #50-80-14-6636, Kewalo wetlands sediment (see Volume I).

T-210 general location, view to east. Excavation located in Reynolds Recycling Warehouse

T-210 north profile wall, view to northeast



T-210 north wall profile

T-210 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–12	Concrete surface
Ib	12–18	Asphalt
Ic	18–22	Fill; 5 Y 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, friable consistency; non-plastic; abrupt, smooth lower boundary; crushed coral base course
Id	20–120	Fill; 2.5 YR 3/4 (dark reddish brown); silt loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrigenous origin; diffuse, wavy lower boundary; imported silt loam fill
Ie	113–145	Fill; 10 YR 3/2 (very dark brown); clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; diffuse, smooth lower boundary
IIa	141–152	Natural; 10 YR 2/1 (black); sandy clay; structureless, massive; moist, friable consistency; slightly plastic; diffuse, smooth lower boundary, peaty layer with decaying organic matter; component of SIHP # -6636, Kewalo wetland sediments
IIb	149–170	Natural; GLEY 1 4/ 10Y (dark greenish gray); clay; moderate grade, medium sized, platy structure; moist, friable consistency; plastic; mixed origin; diffuse, smooth lower boundary; component of SIHP # -6636, Kewalo wetland sediments
IIc	164–196	Natural; GLEY 1 5/ N (greenish gray); sand with clay; weak, medium, crumb structure; moist, very friable consistency; slightly plastic; mixed origin; abrupt lower boundary; component of SIHP # -6636, Kewalo wetland sediments

3.21 Test Excavation 211 (T-211)

***Ahupua‘a*:**	Waikīkī
LCA:	100 FL
TMK #:	2-3-039
Elevation Above Sea Level:	1.57 m
UTM:	619901.137807mE, 2355014.64512mN
Max Length/Width/Depth:	6.0 m / 0.8 m / 2.04 mbs
Orientation:	120 / 300° TN
Targeted Project Component:	Station building
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 211 (T-211) was located within the Reynolds Recycling Warehouse on Kapi‘olani Street. T-211 was located on private property owned by Sam House Development LLC. T-211 was located approximately 11 m northeast of Kona Street, 13 m northeast of an electric line, and 9 m north of a water line.

Summary of Background Research and Land Use: Baldwin’s 1883 Honolulu Water Works map located T-211 approximately 370 m north of the coastline. S. E. Bishop’s map of the Kewalo area of Honolulu (1884) indicated that T-211 was located within Kekaula’s LCA 100 FL:2, which was comprised fort lands, two ponds, five *ki‘o pua*, one taro *lo‘i*, one house lot, and one kula pasture. Lot Kamehameha’s Grant 2790, comprised of marshlands, was immediately to the south. Sheridan Street was located approximately 190 m west of T-211, according to S.E. Bishop’s 1884 map of Honolulu. W. A. Wall’s 1887 map of Honolulu indicated agricultural development to the north and east of T-211, while the immediate surrounding area remained marshlands. According to the 1919 U.S. Army War Department map, the vicinity of T-211 had undergone moderate urban development since 1887. The 1933 U.S. Army War Department map of Honolulu indicated that the entire area that surrounded T-211 had been marked with a grid pattern for planned urban development and the shoreline had been extended to approximately 600 m south of T-211. The 1939–41 U.S. Army Air Corps aerials and the 1943 U.S. Army War Department map indicated continued urban development in the area including Ala Moana Beach Park, 400 m south of T-211. The 1952 University of Hawai‘i SOEST aerials from Kaka‘ako to Waikīkī indicated, along with heavy urban development, what appeared to be the initial construction phase of the Ala Moana Shopping Center to the south of T-211. According to the 1953 U.S. Army Mapping Service map, the entire area had undergone heavy urban development by that time and T-211 was located just north of present-day Kona Street.

Previous archaeology of the area surrounding T-211 included several studies. T-211 was within an archaeological inventory survey area that was conducted in 2011 between Kona Street and Kapi‘olani Boulevard; a trash layer (SIHP #50-80-14-7193) composed of historic artifacts dating to ca. 1930-1950 was documented (Burke and Hammatt 2012). In 1989, approximately 110 m northwest of T-211, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi Street (Smith

1989). A 2007 archaeological monitoring project of road resurfacing on Pi‘ikoi Street (200 m west of T-211) yielded no cultural materials, but continued monitoring in the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Esh and Hammatt 2006). In 2012, an archaeological inventory survey was conducted 220 m to the southwest of T-211 along Kona Street and documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Runyon et al. 2012). This same historic property was also located southwest of T-211. At the time of this report, an archaeological inventory study documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-211 was excavated to the coral shelf at a depth of 2.04 mbs and beneath the water table at 1.88 mbs. There were no specific factors that limited documentation of T-211.

Stratigraphic Summary: The stratigraphy of T-211 consisted of fill strata overlying natural sediments to the coral shelf. Observed strata included concrete (Ia), silt loam (Ib), second asphalt/concrete fill (Ic), crushed coral (Id), silt loam containing small, rusted metal debris (Ie), and gravelly silt loam (If) overlying natural silt loam (IIa) and clay (IIb) to the coral shelf. The stratigraphy generally conformed to the USDA soil survey designation of Fill land.

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

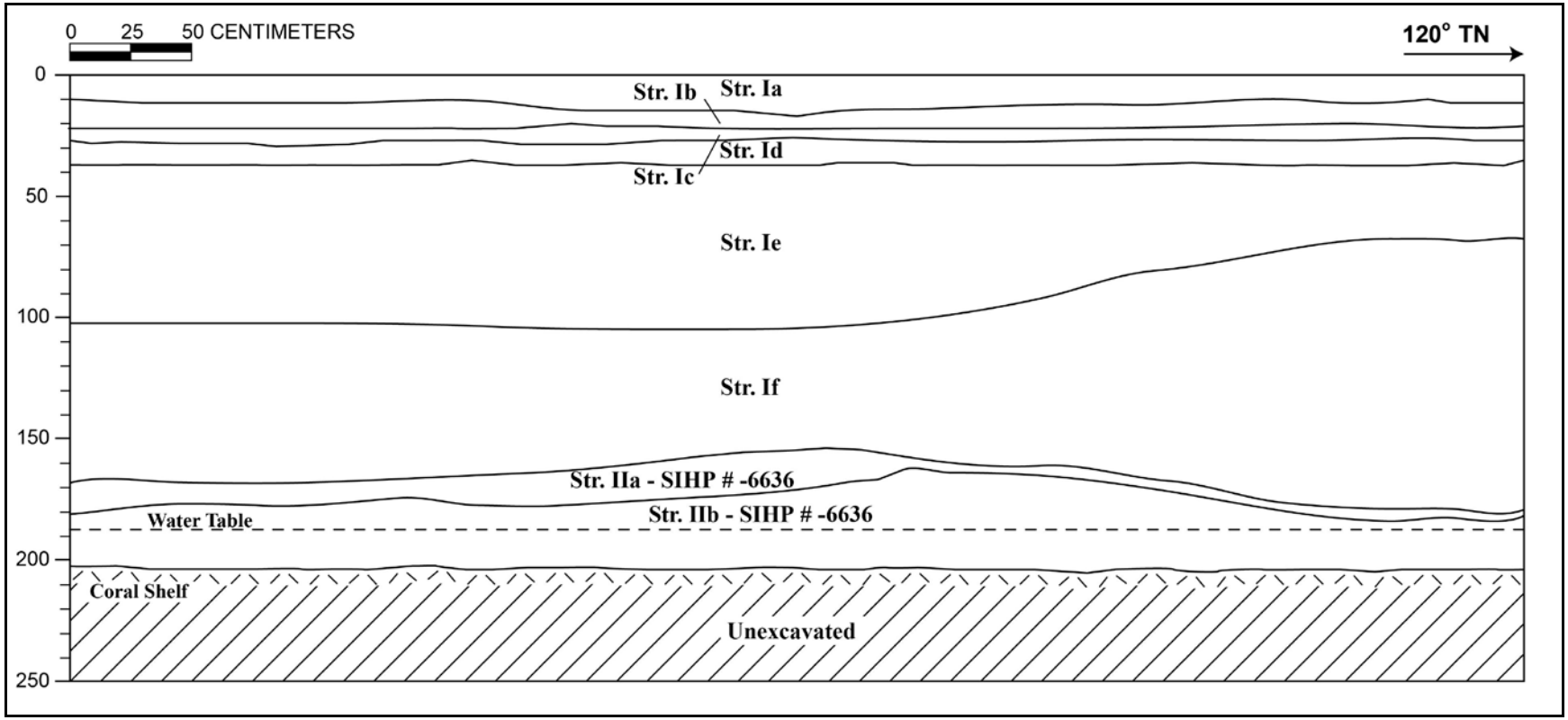
GPR Discussion: A review of amplitude slice maps indicated no linear features that might indicated the presence of utilities. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.75 mbs.

GPR depth profiles for T-211 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.5 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.5 mbs.

Summary: T-211 was excavated to the coral shelf at 2.04 mbs and beneath the water table at 1.88 mbs. The stratigraphy of T-211 consisted of fill strata (Ia–If) overlying natural sediments (IIa–IIb) to the coral shelf. The stratigraphy generally conformed to the USDA soil survey designation of Fill land. Natural sediments (IIa and IIb) were considered to be components of SIHP #50-80-14-6636, Kewalo wetlands sediment (see Volume I).

T-211 general location, view to east. Excavation located in Reynolds Recycling warehouse

T-211 north profile wall, view to northwest.



T-211 north wall profile.

T-211 Stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–15	Concrete
Ib	11–23	Fill; 7.5 YR 3/3 (dark brown); silt loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrigenous origin; very abrupt smooth lower boundary
Ic	20–29	Fill; second asphalt/concrete
Id	27–37	Fill; 5 Y 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, friable consistency; non-plastic; abrupt, smooth lower boundary; crushed coral base course
Ie	37–54	Fill; 5 YR 3/3 (dark reddish brown); silt loam; weak, fine, crumb structure; moist, very friable consistence; slightly plastic; terrigenous; diffuse wavy lower boundary
If	67–180	Fill; 2.5 YR 3/4 (dark reddish brown); gravelly silt loam; weak, fine, crumb structure; moist, very friable consistency; slightly plastic; terrigenous; abrupt wavy lower boundary
IIa	154–180	Natural; 10 YR 2/1 (black); silt loam; weak, fine, platy structure; moist, very friable consistence; non-plastic; terrigenous origin; diffuse, wavy lower boundary; many, fine to medium roots; peat with decaying organic material; component of SIHP # -6636, Kewalo wetland sediments
IIb	163–204	Natural; GLEY 2 6/10G (greenish gray); clay; weak, medium, platy structure; slightly sticky; plastic; mixed origin; lower boundary not visible; common, fine roots; above coral shelf. ; component of SIHP # -6636, Kewalo wetland sediments

3.22 Test Excavation 212 (T-212)

Ahupua‘a:	Waikīkī
LCA:	100: FL
TMK #:	2-3-038: 006
Elevation Above Sea Level:	1.55 m
UTM:	619898.5264 mE, 2354978.735 mN
Max Length/Width/Depth:	3.54 m / 0.91 m / 2.0 mbs
Orientation:	114 / 294° TN
Targeted Project Component:	Station Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 212 (T-212) was located on the southern (*makai*) sidewalk of Kona Street between Kona Iki Street and Ke‘eaumoku Street on private property. Utilities that were located in the general vicinity of T-212 included an electric line (5 m south) and an irrigation valve (1 m northeast). The excavation surface was slightly elevated from the surrounding land surface.

Summary of Background Research and Land Use: Baldwin’s 1883 Honolulu Water Works map located T-212 approximately 370 m north of the coastline. S. E. Bishop’s map of the Kewalo area of Honolulu (1884) indicated that T-212 was located within Lot Kamehameha’s Grant 2790, which was comprised of marshlands, and south of LCA 100 FL:2, comprised of fort lands, two ponds, five *ki‘o pua*, one taro *lo‘i*, one house lot, and one kula pasture. Sheridan Street was located approximately 190 m west of T-212, according to S.E. Bishop’s 1884 map of Honolulu. W. A. Wall’s 1887 map of Honolulu indicated agricultural development to the north and east of T-212, while the immediate surrounding area remained marshlands. According to the 1919 U.S. Army War Department map, the vicinity of T-212 had undergone moderate urban development since 1887. The 1933 U.S. Army War Department map of Honolulu indicated that the entire area that surrounded T-212 had been marked with a grid pattern for planned urban development and the shoreline had been extended to approximately 600 m south of T-212. The 1939–41 U.S. Army Air Corps aerials and the 1943 U.S. Army War Department map indicated continued urban development in the area including Ala Moana Beach Park, 400 m south of T-212. The 1952 University of Hawai‘i SOEST aerials from Kaka‘ako to Waikīkī indicated, along with heavy urban development, what appeared to be the initial construction phase of the Ala Moana Shopping Center to the south of T-212. According to the 1953 U.S. Army Mapping Service map, the entire area had undergone heavy urban development by that time and T-212 was located just south of present-day Kona Street.

Previous archaeology of the area surrounding T-212 included several studies. In 2011 an archaeological inventory survey was conducted between Kona Street and Kapi‘olani Boulevard just north of T-212; a trash layer (SIHP #50-80-14-7193) composed of historic artifacts dating to ca. 1930-1950 was documented (Burke and Hammatt 2012). In 1989, approximately 110 m northwest of T-212, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi Street (Smith 1989). A 2007 archaeological monitoring project of road resurfacing on Pi‘ikoi Street (200 m

west of T-212) yielded no cultural materials, but continued monitoring in the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Esh and Hammatt 2006). In 2012, an archaeological inventory survey was conducted 220 m to the west of T-212 along Kona Street and documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Runyon et al. 2012). This same historic property was also located just west of T-212. At the time of this report, an archaeological inventory study documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-212 was excavated to the coral shelf at a depth of 2.0 mbs and beneath the water table at 1.90 mbs. There were no factors limiting documentation.

Stratigraphic Summary: The stratigraphy of T-212 consisted of fill strata overlying natural sediments to the coral shelf. Observed strata included two concrete slabs (Ia and Ib), clay loam fill (Ic), extremely gravelly sand crushed coral fill (Id), sandy clay loam fill (Ie), and extremely gravelly sand crushed coral (If), overlying natural marsh sediment (IIa), and marsh substratum (IIb) to the coral shelf. The stratigraphy of T-212 generally conformed to the USDA soil designation of Fill land.

Artifact Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: A total of three bulk sediment samples were collected from Stratum IIa (3 L) at 1.05 to 1.3 mbs, and from Stratum IIb (3 L) between 1.6 to 1.7 mbs, and (2 L) 1.65 to 1.8 mbs. All of the bulk sediment samples were wet-screened. No material was collected from the bulk sample of Stratum IIa. The bulk sediment samples collected from Stratum IIb contained non-midden water worn limpets and gastropods (8.4 g), Melampidae (1.8 g), and crustacean (2.9 g). Results of sample analysis indicated Stratum IIb samples contained material consistent with a former wetland environment.

GPR Discussion: A review of amplitude slice maps indicated a linear feature at the northwest end but none were encountered during excavation. Reflectivity is relatively uniform throughout the grid and decreases with depth except for the linear feature. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.5 mbs.

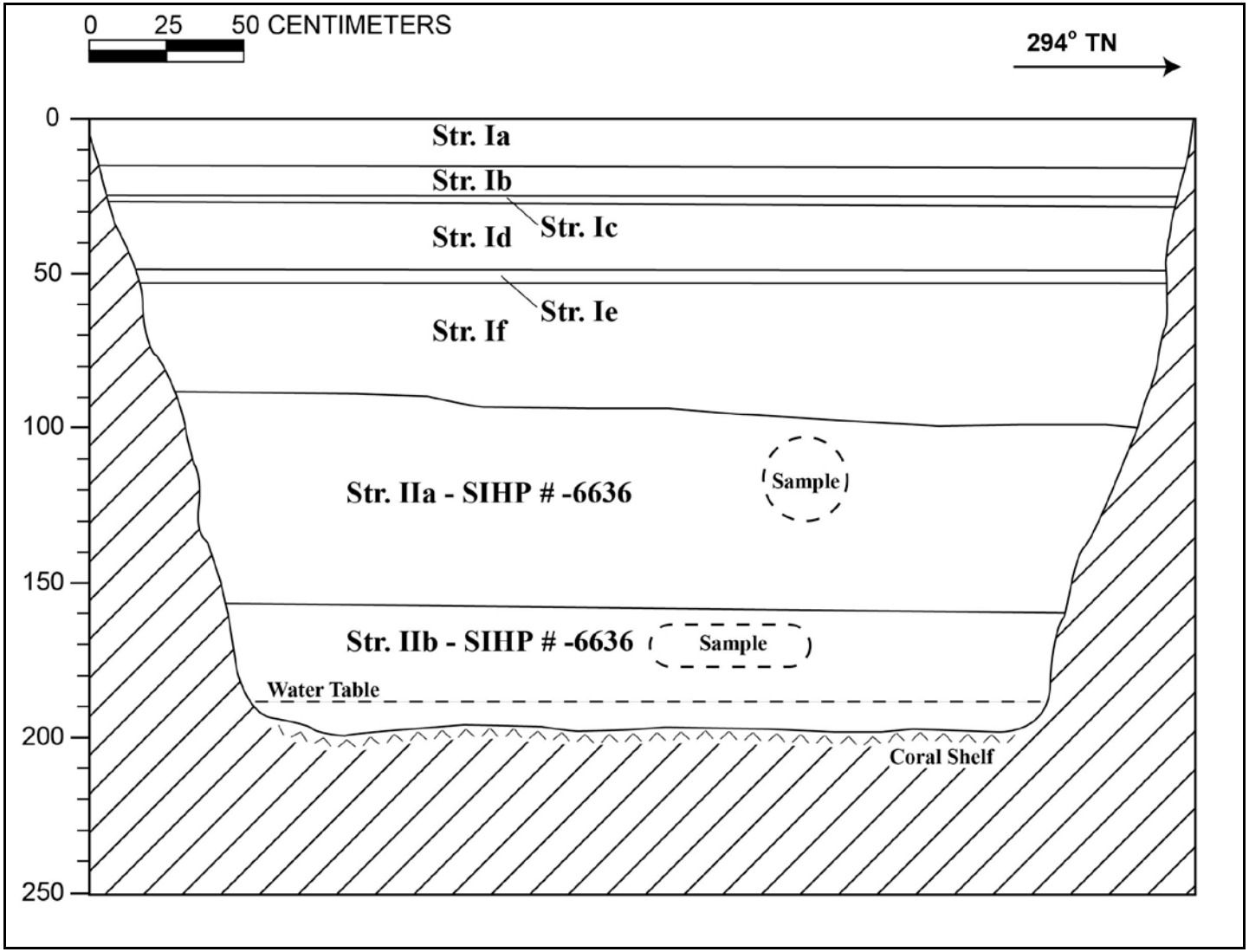
GPR depth profiles for T-212 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.4 mbs. An anomaly is observed in the profile but was not encountered during excavation. The maximum depth of clean signal return was approximately 0.8 mbs.

Summary: T-212 was excavated to the coral shelf at a depth of 2.0 mbs and beneath the water table at 1.90 mbs. The stratigraphy of T-212 consisted of fill strata (Ia–If) overlying natural sediments (IIa–IIb) to the coral shelf. The stratigraphy of T-212 generally conformed to the USDA soil designation of Fill land. The results of the analysis of bulk sediment samples supported evidence that T-212 was within a former wetland environment. Findings indicated that

the overall stratigraphy observed in T-212 correlated with depositional events associated with reclamation of marshlands for urban development. Natural sediments (IIa and IIb) were considered to be components of SIHP #50-80-14-6636, Kewalo wetlands sediment (see Volume I).

T-212 general location, view to south

T-212 southwest profile wall, view to west



T-212 southwest wall profile

T-212 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–15	Concrete sidewalk slab
Ib	15–25	Concrete sidewalk slab
Ic	25–30	Fill; 10 YR 3/4 (dark yellowish brown); sandy clay loam; weak, medium crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, irregular lower boundary; few, medium roots; contained wire mesh and plastic sheeting
Id	25–50	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt lower boundary; crushed coral fill material
Ie	50–55	Fill; 10 YR 3/4 (dark yellowish brown); sandy clay loam; weak, medium, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; thin fill deposit between two deposits of crushed coral
If	50–100	Fill; 10 YR 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral fill material
IIa	90–160	Natural; 10 YR 5/3 (brown); sandy clay; weak, medium, blocky structure; sticky consistency; plastic; mixed origin; clear, smooth boundary; common, fine roots; remnant marsh sediment; contained freshwater and saltwater shells; component of SIHP # -6636, Kewalo wetland sediments
IIb	160–200	Natural; 10 YR 5/1 (gray); silty clay; weak, coarse, blocky structure; wet, sticky consistency; plastic; mixed origin; lower boundary not visible; marsh substrate over coral shelf ; component of SIHP # -6636, Kewalo wetland sediments

3.23 Test Excavation 213 (T-213)

***Ahupua‘a*:**	Waikīkī
LCA:	100 FL
TMK #:	2-3-039: 011
Elevation Above Sea Level:	1.56 m
UTM:	619907.714075mE, 2355006.52645mN
Max Length/Width/Depth:	3.1 m / 0.91 m / 1.95 mbs
Orientation:	106 / 286° TN
Targeted Project Component:	Station Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 213 (T-213) was located within the Reynolds Recycling Warehouse on Kapi‘olani Street on private property owned by Sam House Development LLC. T-213 was located 6 m northeast of an electric line. The topography was level with the surrounding land surface.

Summary of Background Research and Land Use: Baldwin’s 1883 Honolulu Water Works map located T-213 approximately 370 m north of the coastline. S. E. Bishop’s map of the Kewalo area of Honolulu (1884) indicated that T-213 was located within Kekaula’s LCA 100 FL:2, which was comprised fort lands, two ponds, five *ki‘o pua*, one taro *lo‘i*, one house lot, and one kula pasture. Lot Kamehameha’s Grant 2790, comprised of marshlands, was immediately to the south. Sheridan Street was located approximately 190 m west of T-213, according to S.E. Bishop’s 1884 map of Honolulu. W. A. Wall’s 1887 map of Honolulu indicated agricultural development to the north and east of T-213, while the immediate surrounding area remained marshlands. According to the 1919 U.S. Army War Department map, the vicinity of T-213 had undergone moderate urban development since 1887. The 1933 U.S. Army War Department map of Honolulu indicated that the entire area that surrounded T-213 had been marked with a grid pattern for planned urban development and the shoreline had been extended to approximately 600 m south of T-213. The 1939–41 U.S. Army Air Corps aerials and the 1943 U.S. Army War Department map indicated continued urban development in the area including Ala Moana Beach Park, 400 m south of T-213. The 1952 University of Hawai‘i SOEST aerials from Kaka‘ako to Waikīkī indicated, along with heavy urban development, what appeared to be the initial construction phase of the Ala Moana Shopping Center to the south of T-213. According to the 1953 U.S. Army Mapping Service map, the entire area had undergone heavy urban development by that time and T-213 was located just north of present-day Kona Street.

Previous archaeology of the area surrounding T-213 included several studies. T-213 was within an archaeological inventory survey area that was conducted in 2011 between Kona Street and Kapi‘olani Boulevard; a trash layer (SIHP #50-80-14-7193) composed of historic artifacts dating to ca. 1930-1950 was documented (Burke and Hammatt 2012). In 1989, approximately 120 m northwest of T-213, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi

Street (Smith 1989). A 2007 archaeological monitoring project of road resurfacing on Pi‘ikoi Street (210 m west of T-213) yielded no cultural materials, but continued monitoring in the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Esh and Hammatt 2006). In 2012, an archaeological inventory survey was conducted 230 m to the southwest of T-213 along Kona Street and documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Runyon et al. 2012). This same historic property was also located just southwest of T-213. At the time of this report, an archaeological inventory study documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-213 was excavated to a depth of 1.95 mbs, and beneath the water table at 1.72 mbs. There were no factors limiting documentation of T-213.

Stratigraphic Summary: The stratigraphy of T-213 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata included concrete (Ia), silt loam fill (Ib), second asphalt/concrete fill (Ic), crushed coral fill (Id), silt loam fill (Ie), gravelly silt loam fill (If), and cobbles and boulders with little to no soil matrix (II) to the base of excavation. The stratigraphy conformed to the USDA soil survey designation of Fill land.

Artifacts Discussion: No artifacts were observed.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

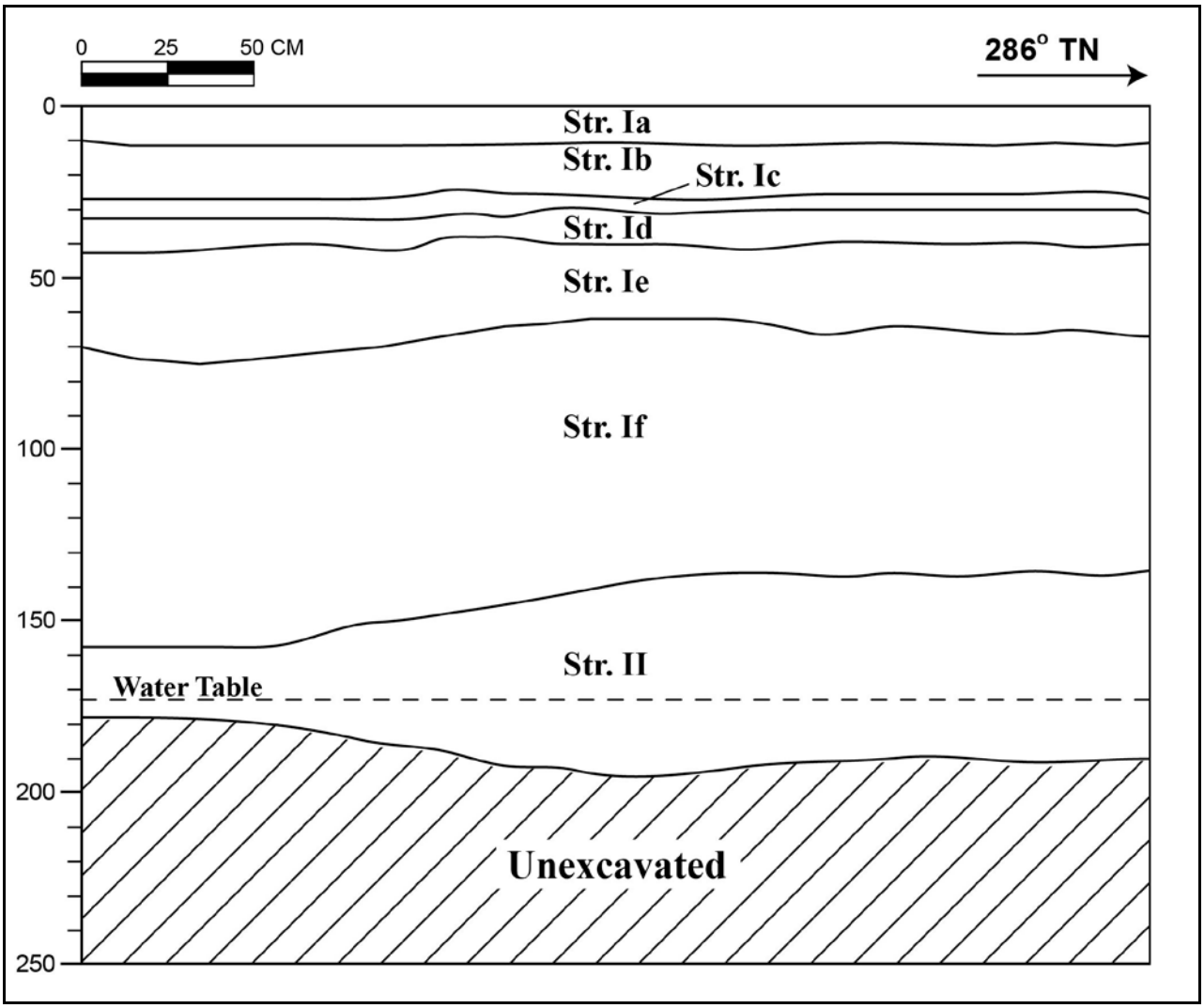
GPR Discussion: A review of amplitude slice maps indicated no linear features that might indicated the presence of utilities. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.75 mbs.

GPR depth profiles for T-213 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.5 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.75 mbs.

Summary: T-213 was excavated to a depth of 1.95 mbs, and beneath the water table at 1.72 mbs. The stratigraphy of T-213 consisted of fill strata (Ia–If) overlying natural sediment (II) to the base of excavation. The stratigraphy conformed to the USDA soil survey designation of Fill land. No cultural materials were identified within T-213.

T-213 general location, view to east. Excavation located in Reynolds Recycling Warehouse

T-213 south profile wall



T-213 north profile

T-213 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–12	Concrete
Ib	11–27	Fill; 7.5 YR 3/3 (dark brown); silt loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrigenous; very abrupt smooth lower boundary
Ic	27–32	Asphalt
Id	30–42	Fill; 5 Y 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, friable consistency; non-plastic; abrupt, smooth lower boundary; crushed coral base course
Ie	39–74	Fill; 5 YR 3/3 (dark reddish brown); silt loam; weak, fine, crumb structure; moist, very friable consistency; slightly plastic; terrigenous; diffuse wavy lower boundary; contained some metal fragments
If	62–158	Fill; 2.5 YR 3/4 (dark reddish brown); gravelly silt loam; weak, fine, crumb structure; moist, very friable consistency; slightly plastic; terrigenous; abrupt wavy lower boundary
II	131–195	Natural; rocky layer with cobbles and boulders; no sediment matrix

3.24 Test Excavation 214 (T-214)

Ahupua‘a:	Waikīkī
LCA:	101 FL
TMK #:	2-3-039: 006
Elevation Above Sea Level:	1.53 m
UTM:	619917.4974 mE, 2355005.269 mN
Max Length/Width/Depth:	6.0 m / 0.8 m / 1.9 mbs
Orientation:	140 / 320° TN
Targeted Project Component:	Station Building
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 214 (T-214) was located on Kona Street between Kona Iki Street and Ke‘eaumoku Street, on private property. Utilities that were present in the general vicinity of T-217 included an electrical line located 9.7 m to the north. The topography of the excavation area was level.

Summary of Background: Baldwin’s 1883 Honolulu Water Works map located T-214 approximately 370 m north of the coastline. S. E. Bishop’s map of the Kewalo area of Honolulu (1884) indicated that T-214 was located within Kekaula’s LCA 100 FL:2, which was comprised fort lands, two ponds, five *ki‘o pua*, one taro *lo‘i*, one house lot, and one kula pasture. Lot Kamehameha’s Grant 2790, comprised of marshlands, was immediately to the south. Sheridan Street was located approximately 200 m west of T-214, according to S.E. Bishop’s 1884 map of Honolulu. W. A. Wall’s 1887 map of Honolulu indicated agricultural development to the north and east of T-214, while the immediate surrounding area remained marshlands. According to the 1919 U.S. Army War Department map, the vicinity of T-214 had undergone moderate urban development since 1887. The 1933 U.S. Army War Department map of Honolulu indicated that the entire area that surrounded T-214 had been marked with a grid pattern for planned urban development and the shoreline had been extended to approximately 600 m south of T-214. The 1939–41 U.S. Army Air Corps aerials and the 1943 U.S. Army War Department map indicated continued urban development in the area including Ala Moana Beach Park, 400 m south of T-214. The 1952 University of Hawai‘i SOEST aerials from Kaka‘ako to Waikīkī indicated, along with heavy urban development, what appeared to be the initial construction phase of the Ala Moana Shopping Center to the south of T-214. According to the 1953 U.S. Army Mapping Service map, the entire area had undergone heavy urban development by that time and T-214 was located just north of present-day Kona Street.

Previous archaeology of the area surrounding T-214 included several studies. T-214 was within an archaeological inventory survey area that was conducted in 2011 between Kona Street and Kapi‘olani Boulevard; a trash layer (SIHP #50-80-14-7193) composed of historic artifacts dating to ca. 1930-1950 was documented (Burke and Hammatt 2012). In 1989, approximately 120 m northwest of T-214, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi

Street (Smith 1989). A 2007 archaeological monitoring project of road resurfacing on Pi‘ikoi Street (220 m west of T-214) yielded no cultural materials, but continued monitoring in the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Esh and Hammatt 2006). In 2012, an archaeological inventory survey was conducted 240 m to the southwest of T-214 along Kona Street and documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Runyon et al. 2012). This same historic property was also located just southwest of T-214. At the time of this report, an archaeological inventory study documented one historic property (SIHP #50-80-14-6636) that consisted of buried Kewalo wetland deposits (Morriss et al. 2013; *Draft*).

Documentation Limitations: T-214 was excavated to a depth of 1.9 mbs, beneath the water table at 1.75 mbs. There were no factors limiting documentation of T-214.

Stratigraphic Summary: The stratigraphy of T-214 consisted of fill strata overlying natural sediment to the coral shelf. Observed strata included concrete (Ia), silt loam fill (Ib), asphalt (Ic), crushed coral fill (Id), gravelly silt loam fill (Ie), thick gravelly sand and a historic trash fill deposit (IIa), a gravelly silt loam fill (IIb), natural sand (IIIa), clay (IIIb), clay (IIIc), sandy clay (IIId), and a silt loam historic A-horizon (IIIe) to the coral shelf. Stratum IIa was identified as a historic trash fill deposit, part of SIHP # -7193. Natural sediments (IIIb through IIIe) were considered to be components of SIHP #50-80-14-6636, Kewalo wetlands sediment (see Volume I). The stratigraphy generally conformed to the USDA soil survey designation of Fill land.

Artifacts Discussion: Seventeen (17) artifacts (Acc. #214-A-1 to A-6) were collected from T-214, within Stratum IIa, a trash layer designated SIHP #50-80-14-7193. The trash layer contained three glass bottles, fourteen earthenware tiles, one red brick tile, metal fragments, red bricks, cinder blocks, and metal wire. The three glass bottles and fourteen tiles were collected for analysis. The glass jars were dated to 1920–1964, 1938, and 1951. Artifacts collected from this test excavation indicated that the trash deposit dates from the early to mid-twentieth century.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

GPR Discussion: A review of amplitude slice maps indicated no linear features that might indicated the presence of utilities. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.25 mbs.

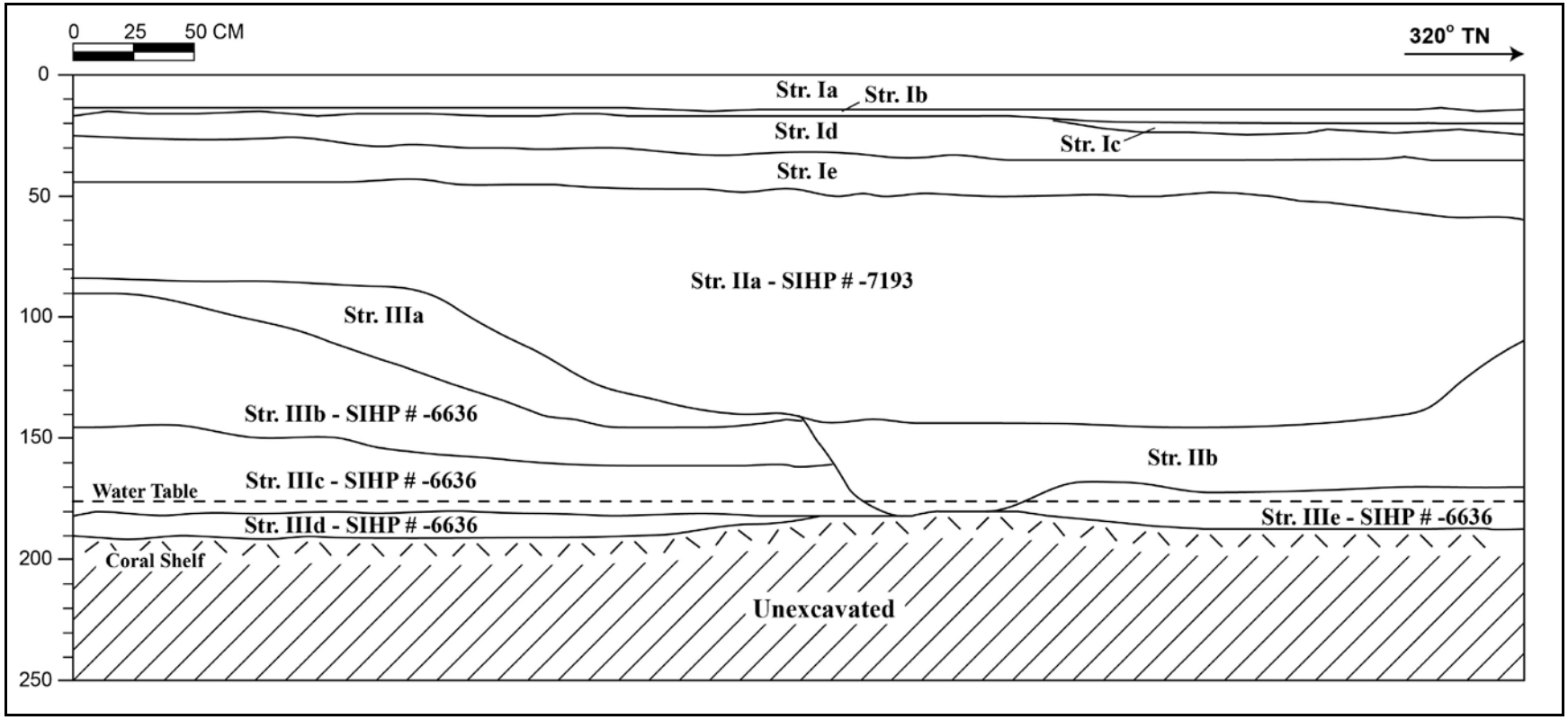
GPR depth profiles for T-214 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.2 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.75 mbs.

Summary: T-214 was excavated to a depth of 1.9 mbs, beneath the water table at 1.75 mbs. The stratigraphy of T-214 consisted of fill (Ia–IIb) overlying natural sediment (IIIa–IIIe) to the water

table. The stratigraphy generally conformed to the USDA soil survey designation of Fill land. Artifacts collected from this test excavation indicated that the trash deposit dates from the early to mid-twentieth century. Stratum IIa was a historic trash deposit that was designated a component of SIHP #50-80-14-7193, a historic trash layer, described in Volume I. The natural sediments (IIIB through IIIe) were identified as components of SIHP #50-80-14-6636, Kewalo wetlands sediment (see Volume I).

T-214 general location, view to east. Excavation located in Reynolds Recycling Warehouse

T-214 southwest profile wall, view to south



T-214 southwest wall profile

T-214 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–14	Concrete
Ib	25–59	Fill; 7.5 YR 3/3, dark brown; silt loam; weak, fine, crumb structure; moist, friable consistency; non-plastic; terrestrial origin; very abrupt, wavy lower boundary; crushed coral inclusions; grading fill.
Ic	19–24	Asphalt
Id	15–35	Fill; 5 Y 8/2 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, friable consistency; non-plastic; abrupt, smooth lower boundary; crushed coral base course
Ie	14–19	Fill; 5 YR 3/3, dark reddish brown; gravelly silt loam; weak, very fine, crumb structure; moist, very friable consistency; slightly plastic; terrestrial origin; abrupt, wavy lower boundary; imported fill.
IIa	42–144	Fill; 5 YR 4/2, dark reddish gray; gravelly sand; fine to coarse; single-grain; moist, loose consistency; non-plastic; marine origin; clear, wavy lower boundary; contains red brick tiles, metal fragments, ceramic tiles, glass jars, red bricks, cinder blocks, and wires; part of SIHP #50-80-14-7193, historic trash layer.
IIb	109–180	Fill; 5 YR 3/3, dark reddish brown; gravelly silt loam; moderate, fine, crumb structure; moist, friable consistency; slightly plastic; terrestrial origin; diffuse, wavy lower boundary; imported fill.
IIIa	83–145	Natural; 10 YR 6/3, pale brown; sand; fine; single-grain; moist, loose consistency; non-plastic; marine origin; diffuse, wavy lower boundary; partially disturbed.
IIIb	89–161	Natural; 10 YR 5/2, grayish brown; clay; moderate, medium, platy structure; moist, friable consistency; very plastic; mixed origin; diffuse, wavy lower boundary; component of SIHP # -6636, Kewalo wetland sediments
IIIc	144–180	Natural; Gley 2 6/10 G, greenish gray; clay; weak, medium, platy structure; moist, very friable consistency; plastic; mixed origin; diffuse, smooth lower boundary; gley; component of SIHP # -6636, Kewalo wetland sediments
IIId	180–190	Natural; Gley 1 7/5 GY, light greenish gray; sandy clay; fine; weak, medium, platy structure; moist, friable consistency; slightly plastic; mixed origin; lower boundary not visible; gley; overlies coral shelf; component of SIHP # -6636, Kewalo wetland sediments
IIIe	168–186	Natural; 10 YR 2/1, black; silt loam; weak, fine, platy structure; wet, slightly sticky consistency; non-plastic; terrestrial origin; abrupt, wavy lower boundary; many fine to medium roots; consists of decaying organic material; peat; old A-horizon; overlies coral shelf; component of SIHP # -6636, Kewalo wetland sediments

3.25 Test Excavation 215 (T-215)

Ahupua‘a: Waikīkī

LCA : 101 FL

TMK #: 2-3-039: 006

Setting: Test Excavation 215 (T-215) was located on private property on Kona Street between Kona Iki Street and Ke‘eaumoku Street. The excavation was abandoned as access to the private property was denied by the landowner.

3.26 Test Excavation 216 (T-216)

Ahupua‘a: Waikīkī

LCA : 101 FL

TMK #: 2-3-039: 006

Setting: Test Excavation 216 (T-216) was located on private property on Kona Street between Kona Iki Street and Ke‘eaumoku Street. The excavation was abandoned as access to the private property was denied by the landowner.

3.27 Test Excavation 217 (T-217)

***Ahupua‘a*:**	Waikīkī
LCA:	N/A
TMK #:	2-3-038: 006
Elevation Above Sea Level:	1.59 m
UTM:	619928.6957 mE, 2354964.924 mN
Max Length/Width/Depth:	3.10 m / 0.90 m / 0.61 mbs
Orientation:	116 / 296° TN
Targeted Project Component:	Station Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 217 (T-217) was located on Kona Street between Kona Iki Street and Ke‘eaumoku Street, on private property. T-217 was located 9.6 m north of a water utility line and 11 m south of a water line. The excavation area was located on the south (*makai*) sidewalk and slightly elevated from the surrounding land surface.

Summary of Background Research and Land Use: Baldwin’s 1883 Honolulu Water Works map located T-217 approximately 370 m north of the coastline. S. E. Bishop’s map of the Kewalo area of Honolulu (1884) indicated that T-217 was located within Lot Kamehameha’s Grant 2790, which was comprised of marshlands, and just south of LCA 100 FL:2, comprised of fort lands, two ponds, five *ki‘o pua*, one taro *lo‘i*, one house lot, and one kula pasture. W. A. Wall’s 1887 map of Honolulu indicated that T-217 was still within marshlands in a large section of land called Kewalo, with urban development to the north. By 1919 substantial urban development had spread throughout the vicinity and the shoreline had been built up, placing T-217 approximately 350.0 m north of the coast, according to the U.S. Army War Department map of 1919. The 1933 U.S. Army War Department map showed a traffic grid system in place and the 1953 U.S. Army Mapping service map depicted T-217 approximately 340 m north of Ala Moana Park.

Several archaeological studies were conducted in the vicinity of T-217. In 1989, approximately 200 m northwest of T-217, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi Street (Smith 1989). A 2006 archaeological monitoring project located in a section of Pi‘ikoi Street (approximately 290 m northwest of T-217) resulted in no significant finds, but continued monitoring in the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Hammatt 2006). In 2000, approximately 230 m northeast of T-217 an archaeological assessment of present day Sam’s Club/Wal-Mart noted that some remains may still be present within that area (Sinoto 2000). In 2011 an archaeological inventory survey was conducted between Kona Street and Kapi‘olani Boulevard 27 m northwest of T-217; a trash layer (SIHP #50-80-14-7193) composed of historic artifacts dating to ca. 1930-1950 was documented (Burke and Hammatt 2012).

Documentation Limitations: T-217 was excavated to a depth of 0.61 mbs. The excavation terminated at a buried concrete utility jacket or structural foundation. An abandoned utility pipe was also encountered above the buried concrete slab at 0.51 mbs.

Stratigraphic Summary: The stratigraphy of T-217 consisted of fill strata to the base of excavation. Observed strata included concrete (Ia), crushed coralline sand (Ib), sandy loam (Ic), sandy silt loam (Id), and cobbly crushed coralline sand (Ie) overlying a buried concrete utility jacket or structural foundation. The stratigraphy conformed to the USDA soil survey designation of Fill land.

Artifact Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

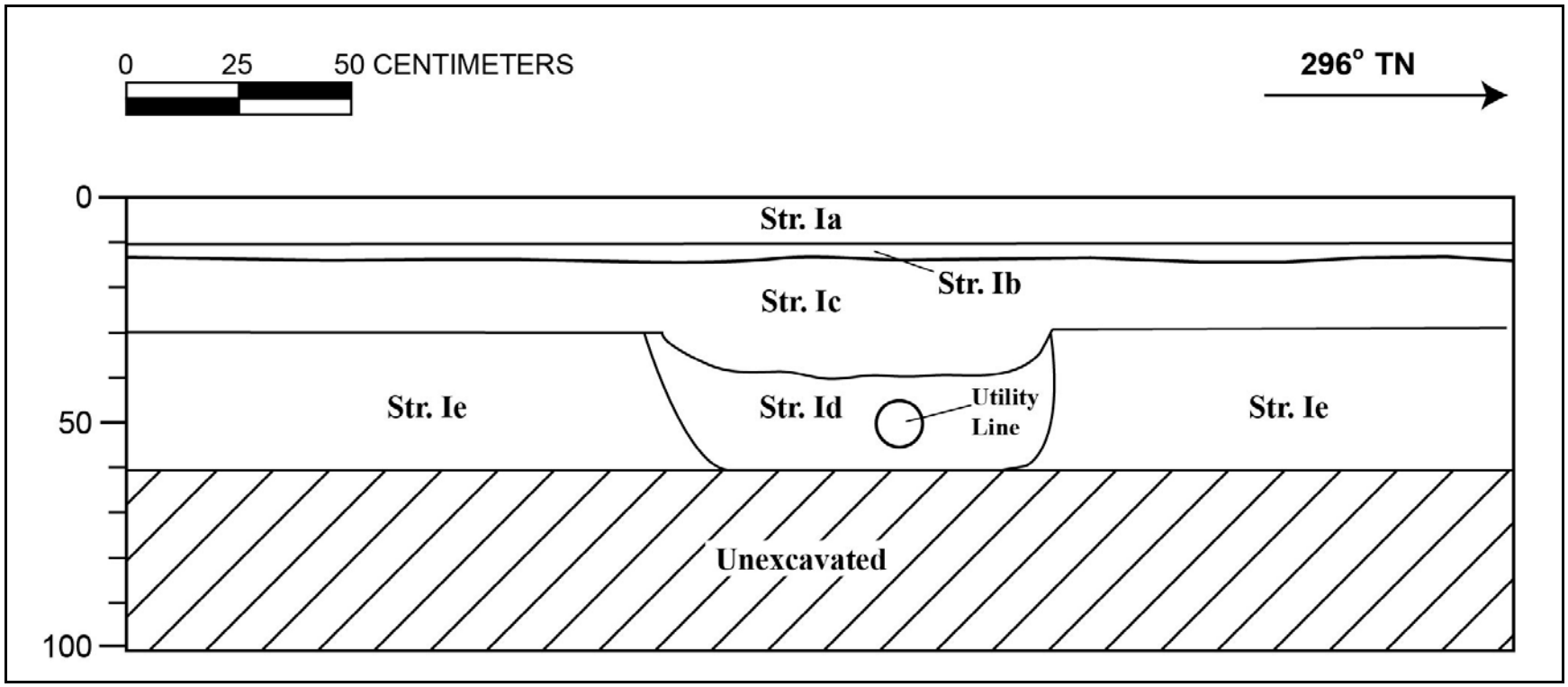
GPR Discussion: A review of amplitude slice maps indicated a linear feature and a utility was encountered during excavation. Reflectivity is relatively uniform throughout the grid and decreases with depth except for the linear feature. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.25 mbs and increases again around 0.75 mbs.

GPR depth profiles for T-217 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The GPR profile also indicated a change in reflectivity occurring around 0.15 mbs and again around 0.85 mbs. No utilities were observed in the GPR profile. The maximum depth of clean signal return was approximately 1.0 mbs.

Summary: T-217 was excavated to a depth of 0.61 mbs. The excavation terminated at a buried concrete utility jacket or structural foundation. The stratigraphy of T-217 consisted of fill strata (Ia–Ie) to the base of excavation. The stratigraphy conformed to the USDA soil survey designation of Fill land. No natural sediment was observed. No cultural materials were identified within T-217.

T-217 general location, view to south

T-217 southwest profile wall, view to west



T-217 southwest wall profile

T-217 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–10	Concrete
Ib	10–15	Fill; 10 YR 8/4 (very pale brown); extremely gravelly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smoother lower boundary; few, medium roots; imported fill
Ic	15–40	Fill; 10 YR 4/4 (dark yellowish brown); sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; abrupt, smooth lower boundary; imported fill, crushed coralline sand mixed with loam
Id	30–61	Fill; 10 YR 2/2 (very dark brown); sandy silt loam; structureless, single-grain; moist, very friable consistency; non-plastic; terrigenous origin; lower boundary not visible; old utility pipe runs though pit
Ie	30–61	Fill; 10 YR 8/2 (very pale brown); extremely cobbly sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; lower boundary not visible; imported fill, saturated from irrigation leak, crushed coral fill

3.28 Test Excavation 218 (T-218)

***Ahupua‘a*:**	Waikīkī
LCA:	N/A
TMK #:	2-3-038: 006
Elevation Above Sea Level:	1.51 m
UTM:	619960.5948 mE, 2354950.381 mN
Max Length/Width/Depth:	4.3 m / 0.83 m / 1.5 mbs
Orientation:	121 / 301° TN
Targeted Project Component:	Station Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 218 (T-218) was located on Kona Street on the north (*mauka*) side of Ala Moana Center on private property. The excavation surface was on the sidewalk slightly elevated from the surrounding land surface.

Summary of Background Research and Land Use: According to Baldwin’s 1883 map of Honolulu, T-218 was located approximately 350 m north of the coastline. Bishop’s 1884 map of Honolulu indicated that T-218 was located approximately 270 m southeast from LCA 100 FL awarded to Kalauoku and contained two ponds, five fry ponds (*ki‘o pua*), one taro patch (*lo‘i*), one house lot, and one pasture (*kula* land). T-218 was located within the northern (*mauka*) portion of Grant 2790 to L. Kamehameha. W. A. Wall’s 1887 map of Honolulu indicated that T-218 was still within marshlands in a large section of land called Kewalo, with urban development to the north. By 1919 substantial urban development had spread throughout the vicinity and the shoreline had been built up, placing T-218 approximately 385 m north of the coast, according to the U.S. Army War Department map of 1919. The 1933 U.S. Army War Department map showed a traffic grid system in place and the 1953 U.S. Army Mapping service map indicated T-218 was located approximately 340 m north of Ala Moana Park.

Several archaeological studies were conducted in the vicinity of T-218. In 1989, approximately 260 m northwest of T-218, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi Street (Smith 1989). A 2006 archaeological monitoring project located in a section of Pi‘ikoi Street (approximately 320 m northwest of T-218) resulted in no cultural finds, but continued monitoring in the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Hammatt 2006). In 2000, approximately 230 m northeast of T-218 an archaeological assessment of present day Sam’s Club/Wal-Mart noted that some remains may still be present within that area (Sinoto 2000). In 2011 an archaeological inventory survey was conducted between Kona Street and Kapi‘olani Boulevard 55 m northwest of T-218; a trash layer (SIHP #50-80-14-7193) composed of historic artifacts dating to ca. 1930-1950 was documented (Burke and Hammatt 2012).

In 2011, an archaeological inventory survey was conducted between Kona Street and Kapi‘olani Boulevard approximately of T-218 in which a trash layer (SIHP #50-80-14-7193) composed of historic artifacts was dated to the early to mid-twentieth century (Burke and Hammatt 2012).

Documentation Limitations: T-218 was excavated to a depth of 1.5 mbs, and beneath the water table at 1.4 mbs. There were no specific factors that limited documentation of T-218.

Stratigraphic Summary: The stratigraphy of T-218 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata included concrete (Ia), base course (Ib), crushed coral fill (Ic), sandy clay loam (Id), crushed coral fill (Ie), and very gravelly sandy loam (If) overlying a decomposed coral shelf (II) to the water table. The stratigraphy conformed to the USDA soil survey designation of Fill land.

Artifact Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

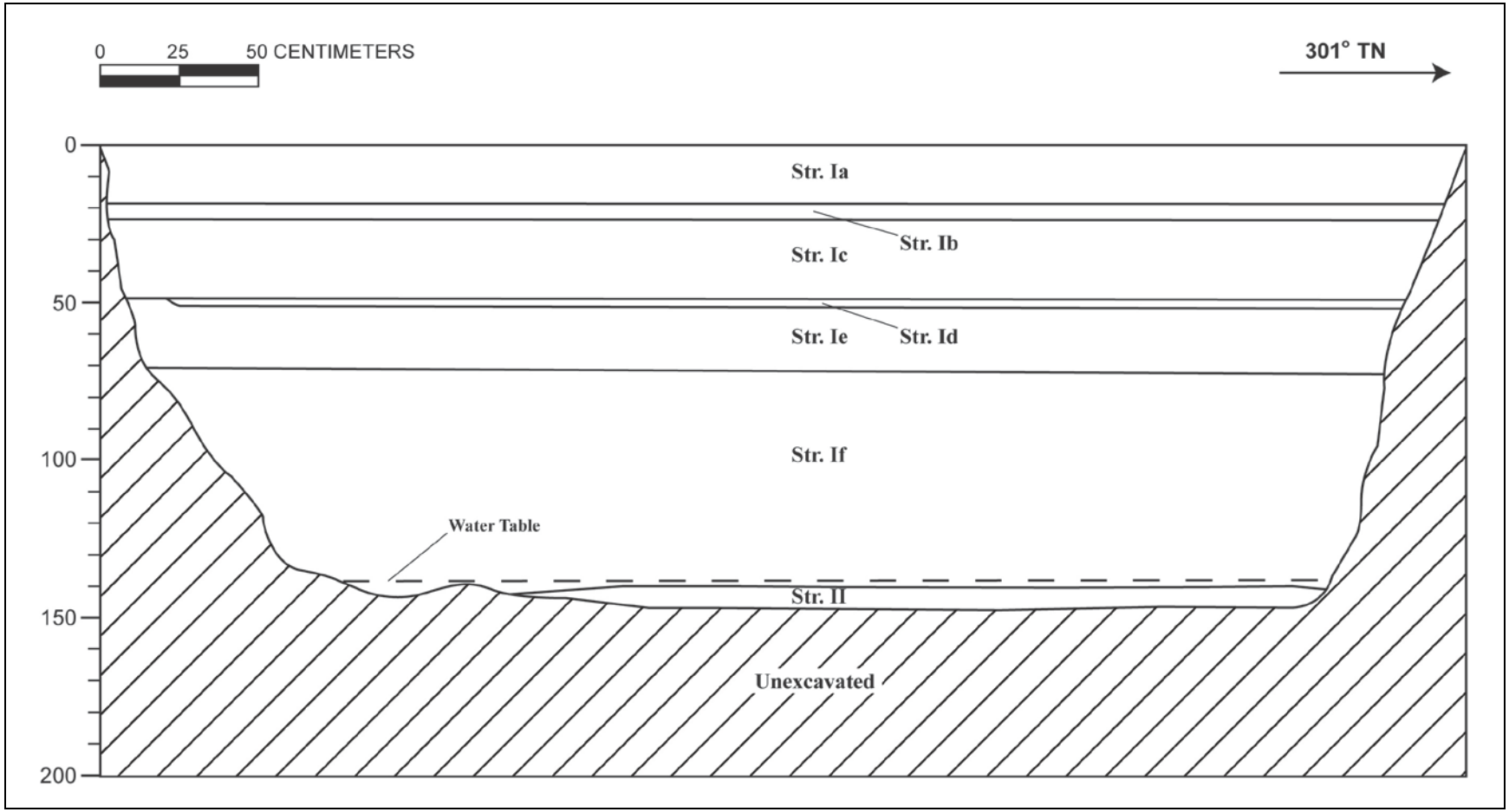
GPR Discussion: A review of amplitude slice maps indicated no linear features that might indicated the presence of utilities. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.75 mbs.

GPR depth profiles for T-218 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.4 mbs. No utilities observed in the profile. The maximum depth of clean signal return was approximately 1.15 mbs.

Summary: T-218 was excavated to a depth of 1.5 mbs, and beneath the water table at 1.4 mbs. The stratigraphy of T-218 consisted of fill strata (Ia–If) overlying natural sediment (II) to the base of excavation. The stratigraphy conformed to the USDA soil survey designation of Fill land. No cultural materials were observed.

T-218 general location, view to west

T-218 southwest wall profile, view to west



T-218 southwest wall profile

T-218 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–20	Concrete slab
Ib	20–25	Fill; 10 YR 3/4 (dark yellow brown) with few, fine to medium mottles of 10 YR 8/1 (white); gravelly sandy clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; subgrade fill deposited beneath bus pad
Ic	25–50	Fill; 10 YR 8/2 (very pale brown); very gravelly cobbly silty sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral fill deposit
Id	48–54	Fill; 10 YR 3/4 (dark yellow brown); sandy clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; thin fill layer between two (2) layers of crushed coral fill
Ie	50–75	Fill; 10 YR 8/2 (very pale brown); very gravelly cobbly silty sand; structureless, single-grain; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral fill material
If	72–145	Fill; 10 YR 7/4 (very pale brown); very gravelly sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; mixed origin; clear, smooth lower boundary
II	142–150	Natural; 10 YR 7/1 (light gray); very cobbly silty sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; marine origin; lower boundary not visible; decomposed coral shelf

3.29 Test Excavation 219 (T-219)

***Ahupua‘a*:**	Waikīkī
LCA:	N/A
TMK #:	2-3-039: 004
Elevation Above Sea Level:	1.58 m
UTM:	619971.1696 mE, 2354973.015mN
Max Length/Width/Depth:	3.1 m / 0.91 m / 1.75 mbs
Orientation:	6 / 186° TN
Targeted Project Component:	Station Column
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation T-219 (T-219) was located in the parking lot of TandL Mu‘umu‘u Outlet north (*mauka*) of Kona Street on private property. The topography of the excavation area was level with the surrounding land surface.

Summary of Background Research and Land Use: According to Bishop’s 1884 map of Honolulu, T-219 was within marshlands and located approximately 270 m southeast from LCA 100 FL awarded to Kalauoku which contained two ponds, five fry ponds (*ki‘o pua*), one taro patch (*lo‘i kalo*), one house lot, and one pasture (*kula* land). W. A. Wall’s 1887 map of Honolulu indicated that T-219 was still within marshlands in a large section of land called Kewalo with urban development to the north. By 1919 substantial urban development had spread throughout the vicinity and the shoreline had been built up, placing T-219 approximately 470 m north of the coast, according to the U.S. Army War Department map of 1919. The 1933 U.S. Army War Department map of Honolulu showed a traffic grid system in place and the 1953 U.S. Army Mapping Service map indicated that T-219 was located approximately 450 m north of Ala Moana Park.

Several archaeological studies were conducted in vicinity of T-219. In 1989, approximately 280 m northwest of T-219, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi Street (Smith 1989). A 2006 archaeological monitoring project located in a section of Pi‘ikoi Street (approximately 370 m northwest of T-219) resulted in no significant finds, but continued monitoring in the area was recommended due to the potential for encountering archaeological material and human burials in the general vicinity (Hammatt 2006). In 2000, approximately 180 m northeast of T-219, an archaeological assessment of present day Sam’s Club/Wal-Mart noted that some remains may still be present within the “superblock” (Sinoto 2000). In 2011, an archaeological inventory survey was conducted between Kona Street and Kapi‘olani Boulevard in which a trash layer (SIHP #50-80-14-7193) composed of historic artifacts was dated to the early to mid-twentieth century (Burke and Hammatt 2012).

Documentation Limitations: T-219 was excavated to a depth of 1.75 mbs, and beneath the water table at 1.70 mbs. The southern portion of T-219 was unexcavated beneath 0.2 mbs due to a utility line.

Stratigraphic Summary: The stratigraphy of T-219 consisted of fill strata overlying natural sediment to the base of excavation. Observed strata included asphalt (Ia), extremely gravelly sandy loam (Ib), and silty clay (Ic) overlying natural silty clay (IIa) and natural sandy clay (IIb). The stratigraphy generally conformed to the USDA soil survey designation of Fill land.

Artifact Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: A total of two bulk sediment samples were collected from Stratum IIa between 1.10–1.75 mbs (1 L) and Stratum IIb between 1.40–1.75 mbs (3 L). The sediment samples were wet-screened. The bulk sample from Stratum IIa contained charcoal (0.2 g), terrestrial and/or marine snail shell (47.7 g), naturally-occurring, water-rounded marine shell (0.5 g), wood (0.4 g), and sub-angular to semi-rounded basalt gravels. The bulk sample from Stratum IIb contained charcoal (2.0 g), terrestrial and/or marine snail shell (150.8 g), naturally-occurring, water-rounded marine shell (4.6 g), *Ruppia maritima* seeds, and coral gravels. The *Ruppia maritima* seeds from Stratum IIb were commonly found within brackish water along coasts and inland waters. The results of sample analysis supported the identification of the natural sediment (IIa and IIb) as wetland deposits.

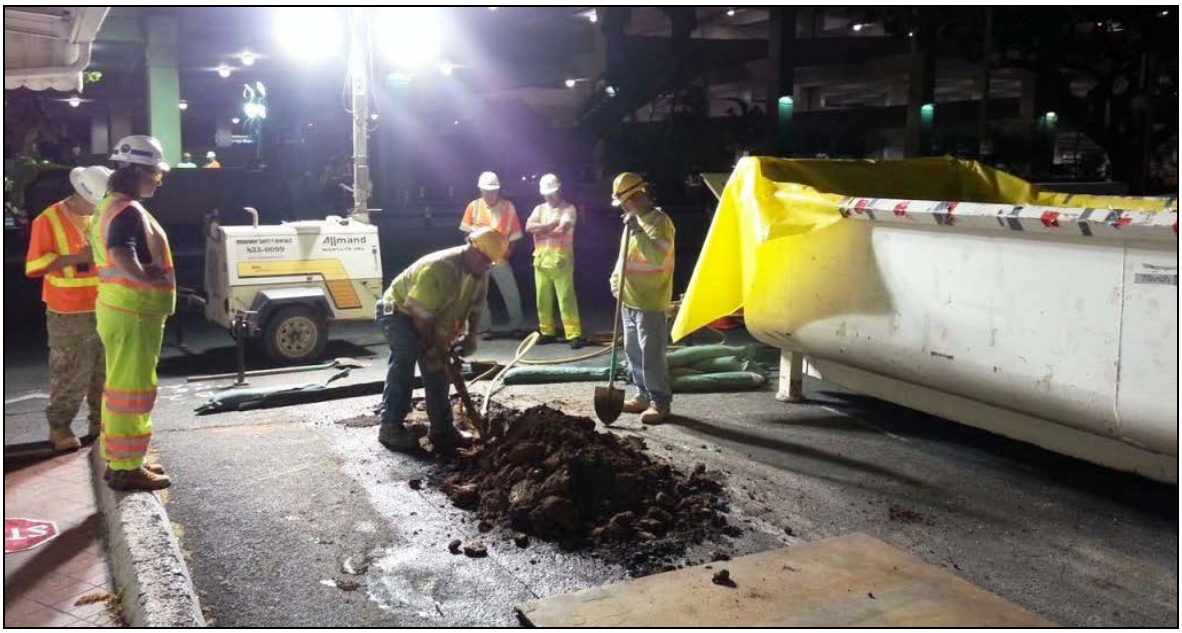
The snail shells collected from bulk samples of Stratum IIa and IIb were submitted for additional identification. The analysis of snail shells documented the presence of an estuarine, strandline, and shoreline-dwelling species, *A. parvula*, was considered to be consistent with a coastal location. A fresh- or brackish-water environment was present with the finding of *M. tuberculata* indicating permanent water. The presence of historically introduced alien species, *Physa* sp. and *P. duryi*, in the Stratum IIa sample (but not in the sample from Stratum IIb) indicates the IIa sample dates to the historic period (or that it was subject to contamination from more recent sediments) and would be consistent with mid- to late-nineteenth century (or later) rice cultivation as represented in the Stratum IIa sample.

GPR Discussion: A review of amplitude slice maps indicated a linear feature outside the excavation boundaries, but a utility was encountered during excavation. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.5 mbs.

GPR depth profiles for T-219 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.35 mbs. Anomalies are observed in the profile and one corresponds to the utility encountered during excavation and the other is not within excavation boundaries. The maximum depth of clean signal return was approximately 0.75 mbs.

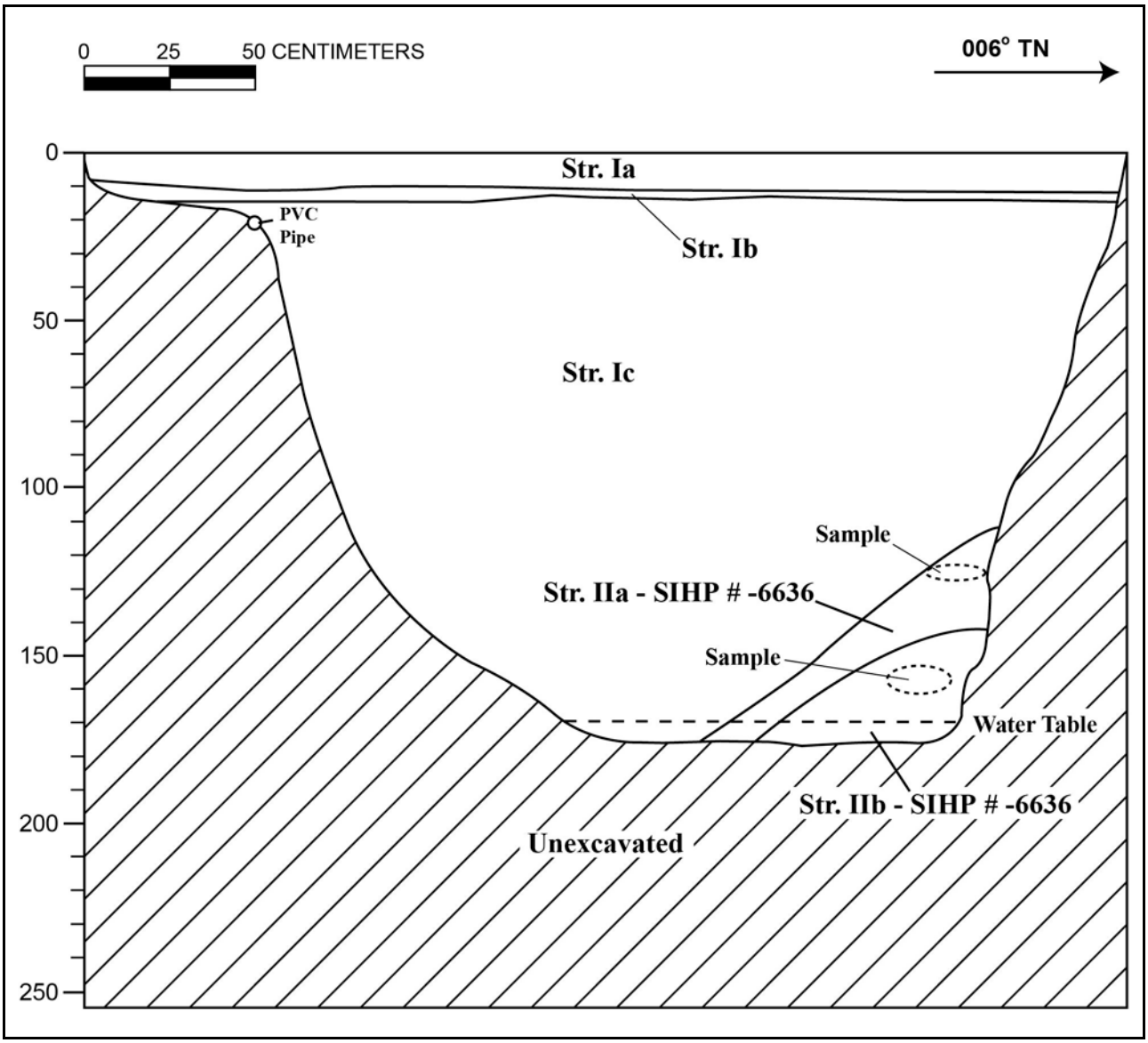
Summary: T-219 was excavated to a depth of 1.75 mbs, and beneath the water table at 1.70 mbs. The stratigraphy of T-219 consisted of fill strata (Ia–Ic) overlying natural sediment (IIa–IIb) to the base of excavation. The stratigraphy generally conformed to the USDA soil survey designation of Fill land. A total of two bulk sediment samples were collected from Stratum IIa between 1.10–1.75 mbs (1 L) and Stratum IIb between 1.40–1.75 mbs (3 L). The results of

sample analysis supported the identification of the natural sediment (IIa and IIb) as wetland deposits. The snail shells collected from bulk samples of Stratum IIa and IIb were submitted for additional identification. The analysis of snail shells documented the presence of an estuarine, strandline, and shoreline-dwelling species, *A. parvula*, was considered to be consistent with a coastal location. A fresh- or brackish-water environment was present with the finding of *M. tuberculata* indicating permanent water. The presence of historically introduced alien species, *Physa* sp. and *P. duryi*, in the Stratum IIa sample (but not in the sample from Stratum IIb) indicates the IIa sample dates to the historic period (or that it was subject to contamination from more recent sediments) and would be consistent with mid- to late-nineteenth century (or later) rice cultivation as represented in the Stratum IIa sample. The natural sediment (IIa and IIb) within T-219 has been designated a component of SIHP #50-80-14-6636, Kewalo wetlands sediment, described in Volume I.



T-219 general location, view to southwest

T-219 west wall profile, view to north



T-219 west wall profile

T-219 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–22	Asphalt
Ib	10–15	Fill; 10 YR 2/1 (black); extremely gravelly sandy loam; structureless, single-grain; moist, loose consistency; non-plastic; terrigenous origin; abrupt, broken/discontinuous lower boundary; sub-grade for asphalt surface
Ic	12–175	Fill; 10 R 3/4 (dusky red); silty clay; weak, medium, crumb structure; moist, friable consistency; terrigenous origin; abrupt, broken/discontinuous lower boundary
IIa	110–175	Natural; 10 YR 2/1 (black); silty clay; weak, medium, crumb structure; wet, slightly sticky consistency; plastic; mixed origin; abrupt, broken/discontinuous lower boundary; organic marsh sediment with peat and shell; sloping topography appeared to be result of disturbance during fill (Ic) deposition; component of SIHP # -6636, Kewalo wetland sediments
IIb	140–175	Natural; 10 YR 6/1 (gray); sandy clay; weak, medium, crumb structure; wet, slightly sticky consistency; slightly plastic; mixed origin; naturally deposited wetland sediment; sloping topography appeared to be result of disturbance during fill (Ic) deposition; component of SIHP # -6636, Kewalo wetland sediments

3.30 Test Excavation 220 (T-220)

***Ahupua‘a*:**	Waikīkī
LCA:	N/A
TMK #:	2-3-038:001
Elevation Above Sea Level:	1.54 m
UTM:	619870.4787mE, 2354992.739mN
Max Length/Width/Depth:	6.8 m / 0.72 m / 1.9 mbs
Orientation:	99 / 279° TN
Targeted Project Component:	Station Building
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 220 (T-220) was located on Kona Street. There were no utilities located near T-220. The test excavation was located on sidewalk slightly raised above the road surface on property owned by General Growth Properties Ala Moana LLC.

Summary of Background Research and Land Use: According to Bishop’s 1884 map of Honolulu, T-220 was within marshlands and located approximately 160 m southeast from LCA 100 FL 1, which was awarded to Kalauoku and contained two ponds, five fry ponds (*ki‘o pua*), one taro patch (*lo‘i kalo*), one house lot, and one pasture (*kula* land). By 1887, T-220 was still within marshlands in a large section of land called Kewalo, with urban development to the north (1887 Wall map). By 1919 substantial urban development had spread throughout the vicinity and the shoreline had been built up, placing T-220 approximately 390 m north of the coast, according to the U.S. Army War Department map of 1919. The 1933 U.S. Army War Department map showed a traffic grid system in place and the 1953 U.S. Army Mapping Service map indicated T-220 was located approximately 330 m north of Ala Moana Park.

Several archaeological studies have occurred in vicinity of T-220. In 1989, approximately 120 m northwest of T-220, a human bone fragment (SIHP #50-80-14-04243) was found inadvertently in a construction site on the southeast corner of Kapi‘olani Boulevard and Pi‘ikoi Street (Smith 1989). A 2006 archaeological monitoring project located in a section of Pi‘ikoi Street (approximately 220 m northwest of T-220) resulted in no cultural finds, but continued monitoring in the area was recommended due to the high potential for encountering archaeological material and human burials in the general vicinity (Esh and Hammatt 2006). In 2000, approximately 250 m northeast of T-220 an archaeological assessment of present day Sam’s Club/Wal-Mart noted that some remains may still be present within the “superblock”.

Documentation Limitations: T-220 was excavated to a depth of 1.9 mbs, and beneath the water table at 1.8 mbs. Large boulders located within the western end of T-220 limited excavation.

Stratigraphic Summary: The stratigraphy of T-220 consisted of fill strata overlying natural sediment to the water table. The observed strata for T-220 included concrete (Ia), gravelly sandy loam (Ib) asphalt (Ic), very gravelly clay loam (Id), extremely gravelly sand (Ie), sandy clay loam (If), and extremely gravelly silty sand (Ig) overlying natural sandy clay (II). Stratum II was

identified as a wetland deposit. The stratigraphy generally conformed to the USDA soil survey designation of Fill land.

Artifacts Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: No sample analysis was conducted.

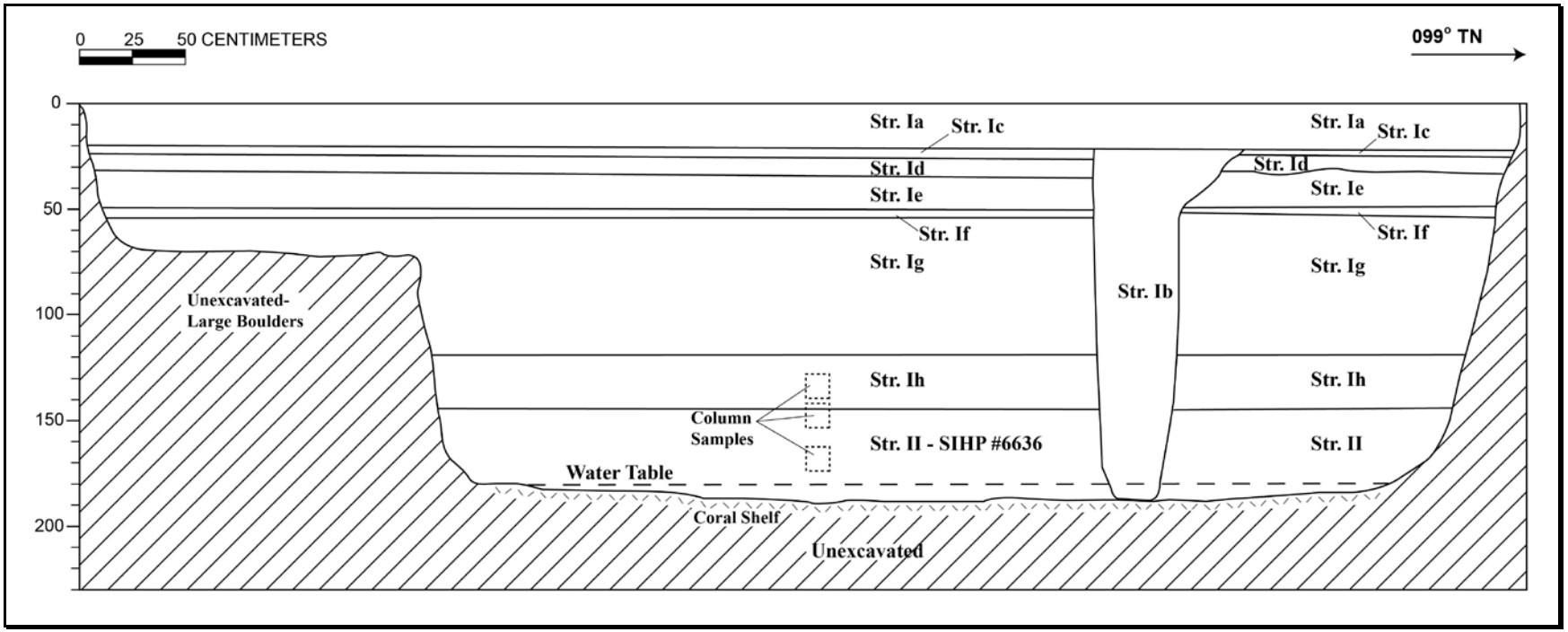
GPR Discussion: A review of amplitude slice maps indicated a linear feature but none were encountered during excavation. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.75 mbs.

GPR depth profiles for T-220 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.65 mbs. No utilities were observed in the profile. The maximum depth of clean signal return was approximately 0.8 mbs.

Summary: T-220 was excavated to 1.9 mbs, and beneath the water table at 1.8 mbs. The stratigraphy of T-220 consisted of fill strata (Ia–Ig) overlying natural sediment (II) to the water table. Stratum II was identified as a wetland deposit. The stratigraphy generally conformed to the USDA soil survey designation of Fill land. The natural wetland deposit (II) was designated as a component of SIHP #50-80-14-6636, Kewalo wetlands sediment, described in Volume I.

T-220 general location, southeast view

T-220 north wall profile, view to northwest



T-220 north wall profile

T-220 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–22	Concrete sidewalk
Ib	20–190	Fill; 10 YR 4/2 (dark grayish brown); gravelly sandy loam; weak, fine, crumb structure; moist, loose consistency; non-plastic; mixed origin; clear, irregular lower boundary; filled pit, possibly related to modern landscaping
Ic	20–25	Asphalt
Id	24–35	Fill; 10 YR 3/4 (dark yellow brown) with few, fine mottles of 10 YR 8/1 (white); gravelly clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; mixed origin; abrupt, smooth lower boundary; few, fine roots; thin fill layer beneath former asphalt surface
Ie	30–50	Fill; 10 YR 8/1 (white); extremely gravelly sand; structureless, single-grain structure; moist, loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral fill
If	50–55	Fill; 10 YR 3/4 (dark yellow brown); sandy clay loam; weak, fine, crumb structure; moist, friable consistency; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; thin fill layer between coral layers
Ig	52–120	Fill; 10 YR 8/3 (very pale brown); extremely gravelly silty sand; structureless, single-grain; loose consistency; non-plastic; marine origin; abrupt, smooth lower boundary; crushed coral fill
Ih	120–145	Fill; 10 YR 5/3 (brown); sandy clay; weak, medium structure; wet, sticky consistency; plastic; mixed origin; abrupt, smooth lower boundary; locally procured, reworked sandy clay
II	142–190	Natural; 10 YR 5/1 (gray); sandy clay; weak, medium, blocky structure; sticky consistency; plastic; mixed origins; lower boundary not visible; natural wetland deposit; component of SIHP # -6636, Kewalo wetland sediments

3.31 Test Excavation 221 (T-221)

Ahupua‘a:	Waikīkī
LCA:	100 FL
TMK #:	2-3-038:006
Elevation Above Sea Level:	1.48 m
UTM:	619874.0884 mE, 2355009.744 mN
Max Length/Width/Depth:	6.1 m / 0.6 m/ 1.5 mbs
Orientation:	104 / 284° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 221 (T-221) was located in the middle of Kona Street, approximately 30 m southeast of the intersection of Kona Street and Kona Iki Street. T-221 was located on property owned by General Growth Properties Ala Moana LLC. Utilities that were located in the vicinity of the excavation included an electric line (1.6 m north) and a water line (1.4 m south). The test excavation area was level with the surrounding road surface.

Summary of Background Research and Land Use: According to S. E. Bishop’s map of the Kewalo area of Honolulu (1884), T-221 was located in the southeast corner of LCA 100 FL, which was awarded to Keaula. The LCA was described as including two ponds, five fry ponds (*ki‘o pu*), one taro patch (*lo‘i kalo*), one house lot, and one pasture (*kula* land). W. A. Wall’s 1887 map of Honolulu indicated T-221 was situated within marshlands and located on the eastern portion of a large section of land called Kewalo, with some urban development to the north. According to the 1919 U.S. Army War Department map, T-221 was located on the margin of an unidentified pond, with urban development and infrastructure to both the west and north. By 1953, T-221 was located on present day Kona Street, according to the 1953 topographic map by the U.S. Army Mapping Service.

Several archaeological studies have occurred within the vicinity of T-221. In 1989, 120 m northwest of T-221, a human bone fragment (SIHP #50-80-14-4243) was found inadvertently in a construction site south of Kapi‘olani Boulevard and southeast of Pi‘ikoi Street (Smith 1989). T-221 was located 5.0 m south of an archaeological literature review and field inspection by Hammatt (2006), which determined the project area comprised a portion of Kewalo*‘ili* and included habitation sites, *lo‘i kalo*, and ponds situated amid the surrounding marshlands. An archaeological inventory survey of the same area by Burke and Hammatt (2012) identified a layer of historic trash (SIHP #50-80-14-7193) 55 m northeast of T-221. Morriss et al. (*Draft*; 2013) also indentified pre- and post-Contact wetland sediments approximately 65 m southwest of T-221.

Documentation Limitations: T-221 was excavated to the coral shelf at 1.5 mbs. The water table was observed at 1.4 mbs. The presence of a utility jacket prevented excavation of the west end of T-221 and a sidewall collapse further limited excavation.

Stratigraphic Summary: The stratigraphy of T-221 consisted of fill strata overlying the natural sediment. Observed stratigraphy included asphalt (Ia), base course (Ib), clay loam (Ic), and natural marsh sediment (II). The stratigraphy conformed to the USDA soil survey designation of Fill land.

Artifact Discussion: No artifacts were observed.

Feature Discussion: No features were observed.

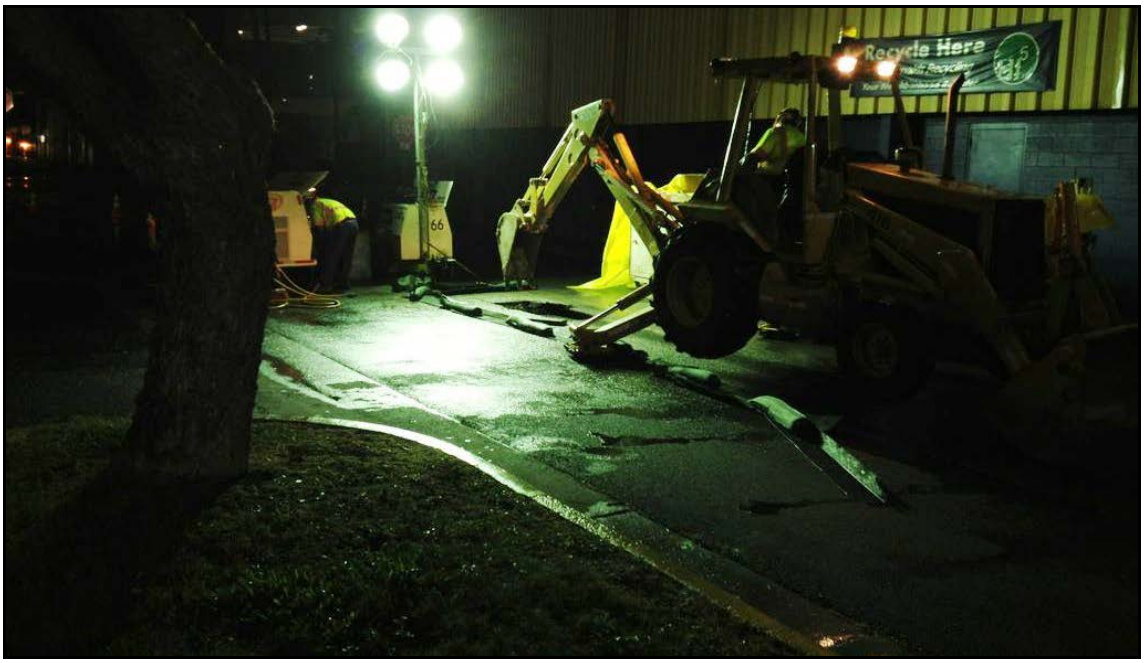
Terrestrial Faunal Remains Collected During Excavation: Fish remains were collected from Stratum II at 1.2-1.5 mbs.

Sample Results: A single bulk sample was collected from Stratum II at 1.2–1.5 mbs (1 L). The bulk sample was wet-screened. The sample contained naturally deposited waterworn shells (2.5 g) and snail shells (0.6 g), burned wood fragments (0.2 g), rusted metal (0.7 g), water rounded basalt and coral gravel (0.6 g), and fish remains (0.2 g). Results of sample analysis indicated samples contained material consistent with a former wetland environment.

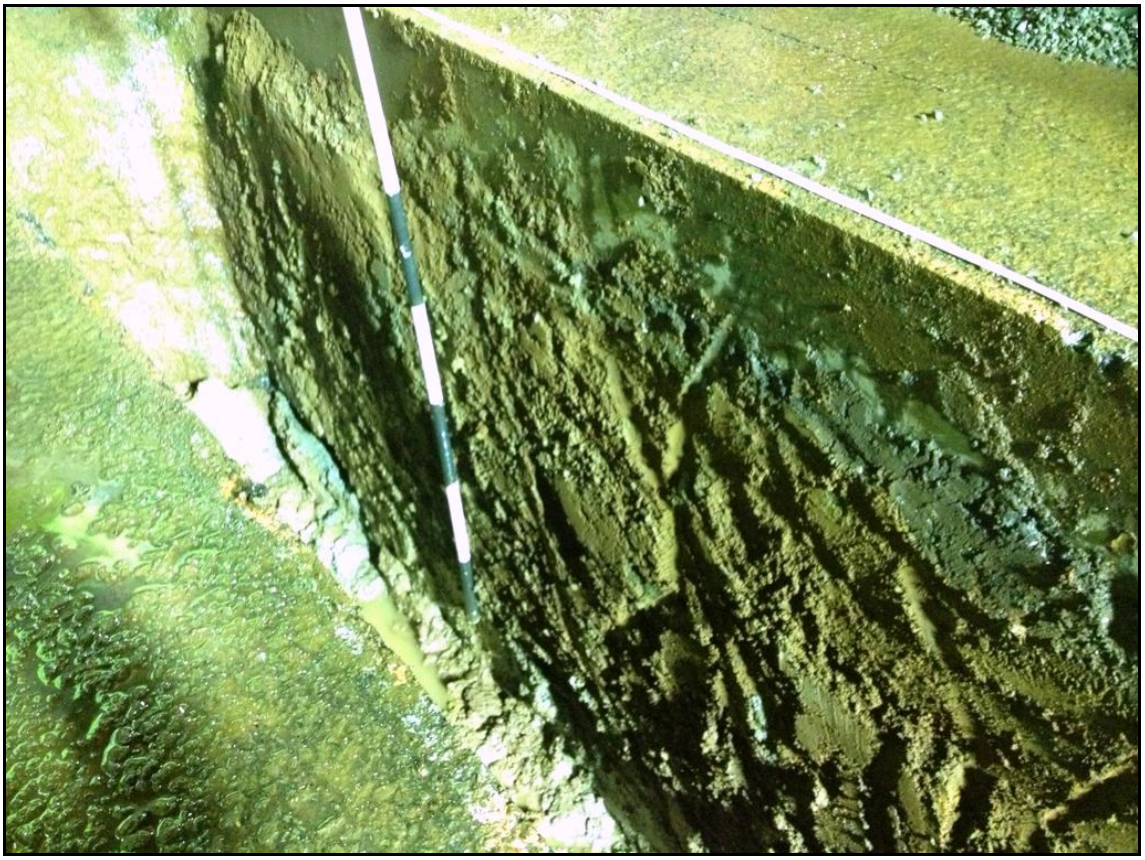
GPR Discussion: A review of amplitude slice maps indicated a linear feature which coincides with a possible utility jacket observed during excavation. Reflectivity is relatively uniform throughout the grid and decreases with depth except the linear features. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.75 mbs.

GPR depth profiles for T-221 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.3 mbs. No anomalies are observed in the profile although a utility jacket was observed during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

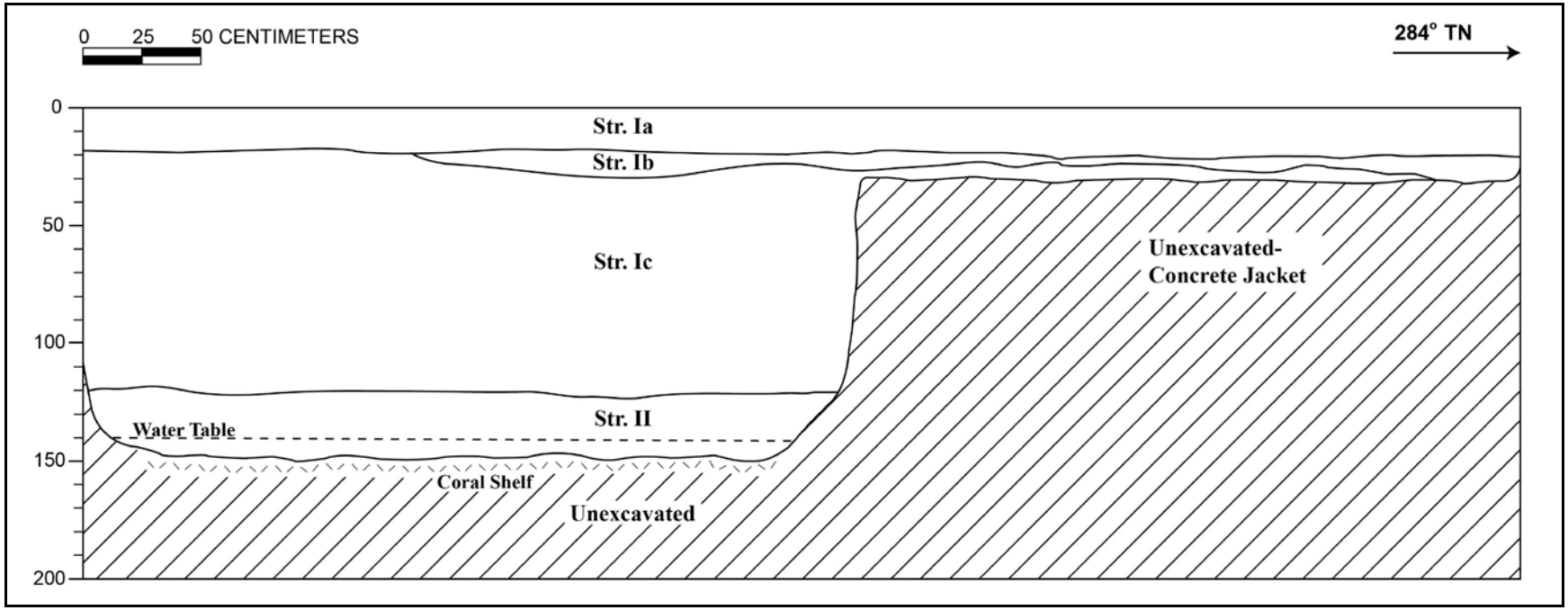
Summary: T-221 was excavated to the coral shelf at 1.5 mbs. The stratigraphy of T-221 consisted of fill strata (Ia–Ic) overlying natural sediment (II) to the coral shelf. The stratigraphy conformed to the USDA soil survey designation of Fill land. Results of sample analysis indicated Stratum II contained material consistent with a former wetland environment. No archaeological cultural resources were identified.



T-221 general location, view to northwest



T-221 south wall profile, view to southeast



T-221 south wall profile

T-221 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–20	Asphalt
Ib	17–30	Fill; 10 YR 3/1 (very dark gray); gravelly sandy loam; weak, fine, crumb structure; moist, loose consistency; non-plastic; terrigenous origin; abrupt, broken/discontinuous lower boundary; base course
Ic	18–125	Fill; 5 YR 3/3 (dark reddish brown); clay loam; weak, coarse, crumb structure; wet, slightly sticky consistency; slightly plastic; mixed origin; clear, smooth lower boundary; may be associated with utility jacket
II	120–150	Natural; GLEY 1 4/1 (dark greenish gray); gravelly loamy sand; single-grain structure; wet, non-sticky consistency; non-plastic; mixed origin; lower boundary not visible; possible remnant marsh sediment

3.32 Test Excavation 222 (T-222)

***Ahupua‘a*:**	Waikīkī
LCA:	100 FL
TMK #:	2-3-038:001
Elevation Above Sea Level:	1.48 m
UTM:	619904.1836mE, 2354995.905mN
Max Length/Width/Depth:	7.37 m / 0.7 m / 1.35 mbs
Orientation:	112 / 292° TN
Targeted Project Component:	Utility Relocation
USDA Soil Designation:	Fill land (FL)

Setting: Test Excavation 222 (T-222) was located within Kona Street on private property owned by General Growth Properties Ala Moana LLC. T-222 was located within the road cut approximately 0.1 m below the surrounding land surface. No subsurface utilities were located in the immediate vicinity.

Summary of Background Research and Land Use: According to Bishop’s 1884 map, T-222 was located in the southeast corner of LCA 100 FL, which was awarded to Keaula. The LCA was described as having included two ponds, five fry ponds (*ki‘o pu*), one taro patch (*lo‘i kalo*), one house lot, and one pasture (*kula* land). W. A. Wall’s 1887 map of Honolulu indicated T-222 was situated within marshlands and located on the eastern portion of a large section of land named Kewalo, with some urban development to the north. According to the 1919 U.S. Army War Department map, T-222 was located on the margin of an unidentified pond, with urban development and infrastructure to both the west and north. By 1953 T-222 was located on present day Kona Street, according to the 1953 topographic map by the U.S. Army Mapping Service.

Several archaeological studies have occurred within the vicinity of T-222. In 1989, 160 m northwest of T-222, a human bone fragment (SIHP #50-80-14-4243) was found inadvertently in a construction site south of Kapi‘olani Boulevard and southeast of Pi‘ikoi Street (Smith 1989). T-222 was located 30 m south of an archaeological literature review and field inspection by Hammatt (2006), which determined the project area comprised a portion of Kewalo‘*ili* and included habitation sites, *lo‘i kalo,* and ponds situated amid the surrounding marshlands. An archaeological inventory survey of the same area by Burke and Hammatt (2012) identified a layer of historic trash (SIHP #50-80-14-7193) 33 m northeast of T-222. Morriss et al. (*Draft*; 2013) also indentified pre- and post-Contact wetland sediments approximately 85 m southwest of T-222.

Documentation Limitations: T-222 was excavated to 1.35 mbs, and beneath the water table at 1.27 mbs. Several factors limited the excavation, including a broken pipe located in the eastern portion of the excavation and a tree root in the mid-portion of the excavation.

Stratigraphic Summary: The stratigraphy of T-222 consisted of fill strata to the water table. Observed strata included asphalt (Ia), extremely stony clay loam fill (Ib), and extremely gravelly

loamy sand fill (Ic) to the base of excavation. The stratigraphy conformed to the USDA soil survey designation of Fill land.

Artifacts Discussion: One artifact was collected from Stratum Ic at 1.24 mbs. This artifact was a complete clear glass milk bottle (Acc. #222-A-1) from an O`ahu dairy. The bottle was made in 1933 or 1943, and indicated an early to mid-twentieth century date for the stratum.

Features Discussion: No features were observed.

Terrestrial Faunal Remains Collected During Excavation: No terrestrial faunal remains were collected individually during excavation.

Sample Results: One bulk sample (1.5 L) was collected from Stratum Ic at 1.02–1.35 mbs. No sample analysis was performed on the bulk sample from Stratum Ic.

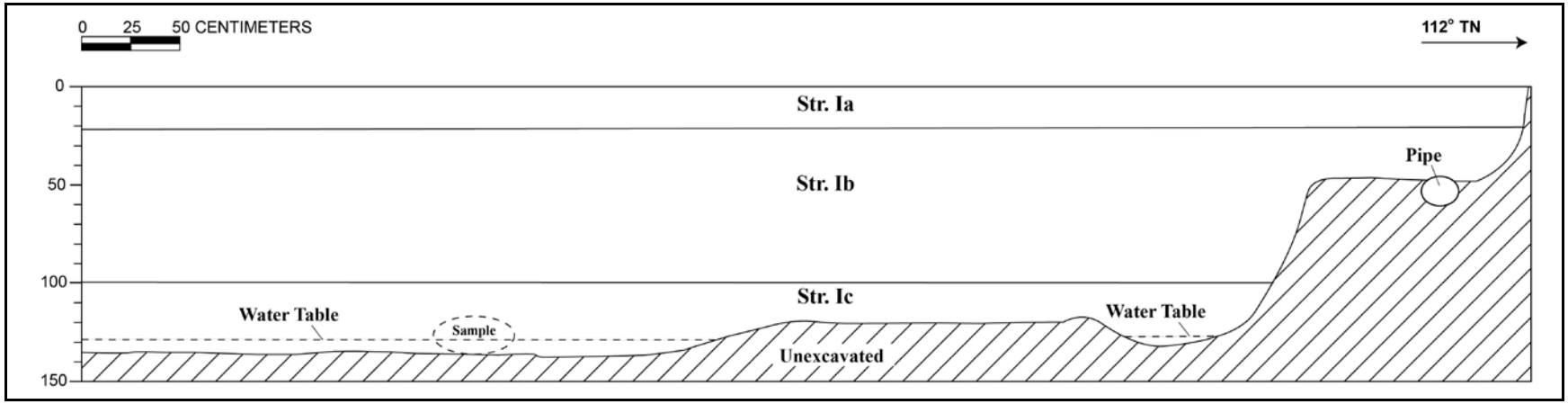
GPR Discussion: A review of amplitude slice maps indicated no linear features although a utility pipe was encountered during excavation. Reflectivity is relatively uniform throughout the grid and decreases with depth. A transition from higher reflectivity to lower reflectivity is observed at approximately 0.5 mbs.

GPR depth profiles for T-222 identify horizontal banding, commonly associated with stratigraphic layering, throughout the survey area. This banding corresponds to variations of density and chemical composition within fill deposits. The profile also indicated a change in reflectivity occurring around 0.3 mbs. No utilities were observed in the profile although a utility was encountered during excavation. The maximum depth of clean signal return was approximately 1.0 mbs.

Summary: T-222 was excavated to 1.35 mbs, and beneath the water table at 1.27 mbs. The stratigraphy of T-222 consisted of fill strata to the water table. The stratigraphy conformed to the USDA soil survey designation of Fill land. The artifact collected from Stratum Ic was consistent with historic disturbance. No sample analysis was performed on the bulk sample from Stratum Ic. Natural sediment was not observed. No archaeological cultural resources were identified.

T-222 general location, view to southwest

T-222 north wall profile, view to northwest



T-222 north profile wall

T-222 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–21	Asphalt
Ib	21–100	Fill; 5 YR 3/3 (dark reddish brown); extremely stony clay loam; weak, coarse, crumb structure; wet, slightly sticky consistency; slightly plastic; mixed origin; diffuse, smooth lower boundary; common, coarse to very coarse roots; fill comprised of over 60% basalt blue rock boulders and angular crushed basalt cobbles within a matrix of reddish brown clay loam; one large (+15cm) tree root observed, limiting excavation
Ic	100–135	Fill; GLEY 1 4/N (dark greenish gray); extremely gravelly loamy sand; structureless, single-grain; wet, non-sticky consistency; non-plastic; mixed origin; lower boundary not visible; contained 1 clear glass milk bottle; fill composed of +60% subangular basalt and crushed coral gravel within a gleyed loamy sand matrix

3.33 Test Excavation 223 (T-223)

Ahupua‘a: Waikīkī

LCA: N/A

TMK #: 2-3-038: 001

Setting: Test Excavation 223 (T-223) was proposed to be located within the Ala Moana Shopping Center parking deck in the vicinity of the Kona Street and Keeaumoku Street intersection. T-223 was abandoned because the Ala Moana Station had been redesigned, eliminating the need for touchdown/connectivity to the shopping center in the vicinity of T-223.

3.34 Test Excavation 224 (T-224)

Ahupua‘a: Waikīkī

LCA: N/A

TMK #: 2-3-038: 001

Setting: Test Excavation 224 (T-224) was proposed to be located within the Ala Moana Shopping Center parking deck in the vicinity of the Kona Street and Keeaumoku Street intersection. T-224 was abandoned because the Ala Moana Station had been redesigned, eliminating the need for touchdown/connectivity to the shopping center in the vicinity of T-224.

3.35 Test Excavation 225 (T-225)

Ahupua‘a: Waikīkī

LCA: N/A

TMK #: 2-3-038: 001

Setting: Test Excavation 225 (T-225) was proposed to be located within the Ala Moana Shopping Center parking deck in the vicinity of the Kona Street and Keeaumoku Street intersection. T-225 was abandoned because the Ala Moana Station had been redesigned, eliminating the need for touchdown/connectivity to the shopping center in the vicinity of T-225.